**EFFECT OF AUTOMATED CREDIT SCORING SYSTEM ON LOAN PERFORMANCE IN COMMERCIAL BANKS IN KENYA: A CASE OF CO-OPERATIVE BANK**

**BY**

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**A RESEARCH PROPOSAL** **SUBMITTED IN FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF INFORMATION SYSTEM MANAGEMENT, KCA UNIVERSITY**

**JANUARY, 2017**

**DECLARATION**

I declare that this research proposal is my original work and has not been presented for degree in any other university.

Sign: ……………………………………….. Date: ………………………

**JAMES AREBA**

This research proposal has been submitted for examination with my approval as university supervisor

Sign: …………………………………… Date: ………………………….

**Supervisor**

**KCA UNIVERSITY**

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# LIST OF ACRONYMS AND ABBREVIATIONS

**CBK**  Central Bank of Kenya

**CGAP**  Consultative Group to Assist the Poor

**CSMI**  Credit Scoring Model for Individuals

**ICT**  Information and Communications Technology

**MFIs**  Microfinance Institutions

**SACCOs**  Savings and credit Cooperative Societies

**SPSS** Statistical Package for SocialSciences

**TAM** Technology Acceptance Model

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the Study

The burst of information technology is transforming industries, services, jobs, products, markets, and organizations. Before this era, individual consumers were evaluated for credit purposes by institutional lending officers, basing their decisions in part on a number of set financial criteria. These officials were often also allowed to exercise wide and sometimes improper discretion as to the credit risk of the borrower (Cocheo, 2009). In today's economy, however, many major lending institutions have abandoned this approach. Instead, this system has been replaced by a method in which a computer program takes information provided by the applicant, as well as several outside sources, and using a complex set of weighted variables, produces a single number by which to rate the applicant's credit risk (Kenneth, 2000). Due to the convenience of these systems, banks are relying more and more on computer credit scoring tools and the credit bureaus that often provide them (Citron & Pasquale, 2014).

Over the last two decades, consumer lending has become increasingly sophisticated as lenders have moved from traditional interview-based underwriting to a reliance on data-driven models to assess and price credit risk. As late as the early 1990s, most lenders were still using a single “house rate” and relied on interview procedures to screen borrowers. As data storage and computing costs fell, and underwriting technology improved, lenders increasingly began to use estimates of default risk to price individual loans. Today, automated credit scoring has become a standard input into the pricing of mortgages, auto loans, and unsecured credit (Einav, Jenkins & Levin, 2013). Using data from the Survey of Consumer Finances, Edelberg (2006) documents the extent of this transformation. She finds that as a result the correlation between loan pricing and estimated and realized default risk has sharply increased. Grodzicki (2012) documents a similar pattern in the credit card industry and ties it specifically to lenders’ investments in information technology.

### 1.1.1 Credit Scoring

Thomas, Edelman and Crook (2012) described Credit Scoring as the set of decision models and their underlying techniques that aid lenders in the granting of consumer credit. These techniques decide who will get credit, how much credit they should get, and what operational strategies will enhance the profitability of the borrower to the lenders. Gunter (2010) also assert that credit scoring is the use of a statistical formula that evaluates a customer's finances and personal credit history and then condenses his or her credit risk to a single number. Though credit scoring gained prominence with the emergence of the computer based model, the actual concept of credit scoring has existed for much longer (Richardson, 2009).

Credit scoring uses the data on consumer behavior. A lender uses this data to help him make decisions in the credit approval process; for instance, whether to give loan to a fresh borrower; whether to increase the credit limits of the existing debtors (Thomas et al., 2012). Lenders in developed countries analyze the creditworthiness of borrowers based on their credit histories taken from credit bureau and also check borrower’s salary and experience before loan approval (Schreiner, 2010). Using a set of criteria such as employment, income, age, assets, outstanding debt and history of repayment, banks are able to compute a score that could help determine the applicant's credit worthiness. The manual process is cumbersome and has several problems. First, the manual system required the lender to hire skilled operators to manually calculate these scores, resulting in excessive administrative costs. Second, the lenders who, due to costs, chose not to use these types of systems were forced to rely primarily upon the business judgment of their lending officers to approve loan applicants (Richardson, 2009).

Lending institutions have started adopting the credit scoring models in evaluating loans. Classification models in credit scoring analyze the characteristics of applicants such as age, income, marital status, payment history are used to classify new candidates into good or bad (Chen & Huang, 2013). According to Chijoriga (2011), Credit scoring models can be qualitative as well as quantitative in nature. Qualitative technique is judgmental and subjective; the disadvantage of qualitative method is that there is no objective base for deciding the default risk of an applicant. While, quantitative technique is a systematic method to categorize into performing or non- performing loans and it has removed the shortcomings of qualitative technique and proved to be more reliable & accurate model.

### 1.1.2 Loan Repayment Performance

A loan is said to be delinquent when a payment is late (CGAP, 2009). A delinquent loan becomes a defaulted loan when the chance of recovery becomes minimal. Delinquency is measured because it indicates an increased risk of loss, warnings of operational problems, and may help to predict how much of the portfolio will eventually be lost because it never gets repaid. According to Lawrence, (2012) There are three broad types of delinquency indicators: collection rates which measures amounts actually paid against amounts that have fallen due, arrears rates measures overdue amounts against total loan amounts and portfolio at risk rates which measures the outstanding balance of loans that are not being paid on time against the outstanding balance of total loans.

Default occurs when a debtor has not met his or her legal obligations according to the debt contract. According to new Basel II Capital Accord, default is defined as 90 days delinquent. For example a debtor has not made a scheduled payment, or has violated a loan covenant (condition) of the debt contract (Mwenje, 2006). A default is the failure to pay back a loan (Lawrence, 2012). Default may occur if the debtor is either unwilling or unable to pay their debt. A loan default occurs when the borrower does not make required payments or in some other way does not comply with the terms of a loan (Ledgerwood et al., 2009).

According to Smirlok (2011) revealed that default is a risk threshold that describes the point in the borrower’s repayment history where he or she missed at least three installments within a 24 month period. This represents a point in time and indicator of behavior, wherein there is a demonstrable increase in the risk that the borrower eventually will truly default, by ceasing all repayments. The definition is consistent with international standards, and was necessary because consistent analysis required a common definition. This definition does not mean that the borrower had entirely stopped paying the loan and therefore been referred to collection or legal processes; or from an accounting perspective that the loan had been classified as bad or doubtful, or actually written-off. Loan default can be defined as the inability of a borrower to fulfill his or her loan obligation as at when due (Mwenje, 2006).

Repayment performance thus serves as a positive signal for increasing the volume of credit availability to various sectors of the economy (Acquah & Addo, 2011).  
However, certain factors are considered before it is availed to the beneficiary and one of such factors is the beneficiaries ability to repay the loan which in turn is also determined by many factors. According to Ugbomeh, Achoja, Ideh and Ofuoku (2008), credit repayment performance could be influenced by a myriad of factors such as interest rate, and the social relations and responsibilities of the borrower.

Kiiru (2007) found out that repayment performance is significantly affected by borrowers’ characteristics, lender’s characteristics and loan characteristics. The marginal effects of each set of characteristics are determined and analyzed. Repayment problems can be in the form of loan delinquency and default. Whatever the form however, the borrowers alone cannot be held responsible wherever problems arise as it is important to examine the extent to which both borrowers and leaders comply with the loan contract as well as the nature of the duties, responsibilities and obligations of both parties as reflected in the design of the Credit program rather than heaping blames only on the borrowers.

### 1.1.3 Commercial Banks in Kenya

In Kenya, the Banking Sector is composed of the Central Bank of Kenya, as the regulatory authority and the regulated; Commercial Banks, Non-Bank Financial Institutions and Forex Bureaus. As at December 2016, Kenya had a total of 42 commercial banks and 1 mortgage finance company with two banks; Chase bank and Imperial bank in receivership (CBK, 2016).

The banking sector in Kenya has reported massive growth and development in recent years. This is attributable to the effective regulation and reforms effected by the central bank after many banks went into bankruptcy in the 1990s, much of the growth in the banking sector has been witnessed in branch network expansion, growth in capitalization and asset base and the expansion of some of the banks regionally. The banks have also been in the frontline of automating their functions to give their customers good service. Kenyan banks have engaged in product innovation whereby use of internet and mobile technology has taken root in various local banks (CBK, 2011).

## 1.2 Problem Statement

The commercial banks have emerged as major institutional investors in information technology applications in developing countries, as information technology transforms industries, services, and jobs. Currently, almost 90 percent of Bank lending operations contain information systems components. Commercial banks in Kenya banks have developed systems along which they are to test the credit score of a borrower. Credit scoring systems are being applied by most of the commercial banks in the country in their assessment and approval or decline of the loan requests by consumers. It is meant to test, judging from the history of the borrower, the possibility of being a defaulter. The banks gather a wide range of information from the loan applicants since the more information they get the more convinced they are on the need to grant or not to grant the loan (Hanna & Boyson, 2013).

Despite these developments the number of non-performing loans in commercial banks in Kenya is rising year by year. According to the Bank Supervision Annual Report (2012), the ratio of non-performing loans to gross loans increased from 4.4 per cent in December 2011 to 4.7 per cent in December 2012; this has risen to 12.1 per cent in the year 2014 (Bank Supervision Annual Report, 2014). In 2016, CBK reported that loan defaults in the banking sector had touched a decade high. In the first quarter of 2016, bad loans stood at eight per cent of the total loans issued by banks, up from 6.1 per cent in December 2015 and 4.6 per cent in June 2015. With a total loan book of Sh2.2 trillion, this means the bad loans are at Sh176 billion up from Sh139.4 billion in December, a Sh36.6 billion spike in the first three months of the year (CBK, 2016). The acceptable limit of non-performing loans is 4% of the gross loans. Banks have been under increased pressure from CBK to adhere to set regulations on treatment of non-performing debt.

The upsurge in NPLs begs the question, what are banks not doing right; bearing in mind that the banks are now using credit scoring systems that enable to gather a wide range of borrowers’ information and use the same to approval or decline of the loan requests, and even show the possibility of a consumer to default. This gap epitomizes this research work, which will focus on determining how the automated credit scoring systems are affecting loan performance in commercial banks.

## 1.3 Objectives of the Study

The general objective is to examine the effect of automated credit scoring systems on loan performance in commercial banks in Kenya: A case of Co-operative Bank of Kenya.

**1.3.1 Specific Objectives**

The study will be guided by the following research objectives:

1. To determine the effect of client's financial information on loan performance in commercial banks in Co-operative Bank of Kenya.
2. To establish the effect of client appraisal on loan performance in Co-operative Bank of Kenya.
3. To determine the effect of credit terms on loan performance in Co-operative Bank of Kenya.
4. To determine the effect of credit risk control measures on loan performance in Co-operative Bank of Kenya.

**1.4 Research Questions**

The study will seek to answer the following research questions:

1. What is the effect of credit history in the credit scoring systems on loan performance in commercial banks in Co-operative Bank in Kenya?
2. What is the effect of credit reference bureau data on loan performance in commercial banks in Co-operative Bank in Kenya?
3. What is the effect of interest rates charged through credit scoring systems on loan performance in commercial banks in Co-operative Bank in Kenya?
4. What is the effect of amount of credit advanced through credit scoring systems on loan performance in commercial banks in Co-operative Bank in Kenya?

## 1.5 Significance of the Study

The study is expected to be of value to the management of commercial banks in Kenya as they will get some insight on the effectiveness of credit scoring systems on loan performance in terms of loan repayment or default rate. Other financial institutions such as SACCOs and MFIs that are using such systems or considering using such systems will also benefit from this study.

This study is also expected to be of value to the borrowers. Most borrowers have limited financial experience and therefore are exploited by incompetent or unscrupulous lenders. This study will however enlightened the borrowers on how they are appraised using automated credit scoring systems to determine their credit worthiness; that is, how much a borrower can qualify and comfortably repay hence informing the banks’ decision to issue out loans.

The study is also expected to be of value to scholars and researchers. The study will add value to the existing body of knowledge and act as a useful resource for those who would be undertaking research on credit scoring systems on loan performance. The study will also act as basis for further research.

## 1.6 The Scope of the Study

In the proposed study the researcher will examine the effect of automated credit scoring systems on loan performance in commercial banks in Kenya, with a focus on Co-operative Bank of Kenya.

## 1.7 Limitations of the Study

The study anticipates that the respondents could be reluctant to provide the necessary data because the research study deals with quite internal business issues which may raise suspicion on the use of the data/information. Employees may also fear to give information about their company, as some may not be sure whether it is not allowed and would not want to be associated with such mistakes because they may be victimized by management. To overcome this challenge, the researcher will first seek permission from the management to collect data from the organization. The respondents will be assured confidentiality of the information given which will be used for study purposes only. The questionnaires to be used will not be prompt to disclose the respondents’ identity.

Another foreseen challenge is the problem of getting accurate data or information from the respondents. This may be as a result of the respondents not having adequate information on the matter under research or respondents refusing to give the right information to the respondent for fear of that information getting to a third party. To overcome this problem; the researcher will make sure that he targets the right staff in the organization as respondents to the study. The researcher will personally administer the questionnaire to the respondents so that he can clarify and interpret the questions for the respondents to fully understand before their give information.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.1 Introduction

This chapter covers theoretical review, empirical review, the conceptual framework, and knowledge gap. The theoretical review discusses the theories that inform the study; empirical review discusses past studies by other authors on the specific research objectives while the conceptual framework presents the schematic diagram that shows the interactions between the independent variables and the dependent variable. The chapter ends with research gaps indentified.

## 2.2 Theoretical Review

The theoretical reviewed theories attributed by other authors and scholars and are relevant to credit scoring systems on loan performance. The study is guided by Diffusion of Innovation Theory, Technology Acceptance Model (TAM), asymmetric information theory and Portfolio Theory.

### 2.2.1 Diffusion of Innovation Theory

The Diffusion of innovation theory by Rodgers sought to explain how new developments or innovations are adopted. This theory suggests that there are five traits of an innovation that influence adoption: relative advantage, compatibility, complexity, triability and observability (Rogers 2003). Relative advantage is the degree to which an innovation is perceived as being superior than the idea it supersedes. Rogers’ theory recommends that innovation that has an unmistakable, unambiguous advantage over past approach will be more easily embraced and implemented. Current research evidence demonstrates that if a potential user saw no relative advantage in utilizing the innovation, it would not be embraced (Rogers & Kim, 2010).

The diffusion theory shows that the traits of innovations influence the extent of adoption (Rogers 2003). The diffusion theory presents a rich point of view on innovation and the drivers that drive adoption of innovations and those that affects them. The theory therefore guides this study in helping understand the characteristics of factors that encourage or hinder the adoption of technology in firms.

### 2.2.2 Technology Acceptance Model (TAM) by Davis (1989)

Technology Acceptance Model (TAM) was designed by Davis (1989) and looks on the factors that influence users’ adoption of technology in general. He contends that, users’ acceptance of a given technology is affected by their perceptions on the usefulness and ease-of-use of that technology. Perceived usefulness is defined as the extent to which a person believes that using a particular technology will enhance job performance while perceived ease of use is defined as the degree to which a person believes that using a technology will be free from effort (Davis, 1989).

In general TAM focuses on the individual 'user' of a computerized system, with the concept of 'perceived usefulness', with extension to bring in more and more factors to explain how a user 'perceives' 'usefulness', and ignores the essentially social processes of information system development and implementation, without question where more technology is actually better, and the social consequences of information system use. TAM believes system usage is determined by the behavioral intention, while the behavioral intention is jointly determined by attitude toward using and usefulness of sensibility. The attitude toward using Information system is determined by the usefulness of sensibility and ease of use. Perceived usefulness is determined by the perceived ease of use and external factors. Perceived ease of use is determined by external factors like skills which indirectly influence the user’s perceived usefulness and risk of acceptance toward personal recommendation (Benbasat & Barki, 2007).

### 2.2.3 Asymmetric Information Theory

The asymmetric information theory was first introduced by Akerlof’s1970 which shows that there exists information asymmetry in assessing bank lending applications (Binks and Ennew, 1997). Information asymmetry theory describes the condition in which relevant information is not known to all parties involved in an undertaking (Ekumah & Essel, 2003). Eppy (2005) describes a condition in which all parties involved in an undertaking do not know relevant information. The theory point out that perceived information asymmetry poses two problems for the financial institution, moral hazard, monitoring entrepreneurial behavior and adverse selection that is making errors in lending decisions.

Theory emphasizes on the importance of private information in explaining credit-market failures. Information asymmetries and the resulting credit constraints have been used to explain anomalous behavior in consumption, borrowing, and labor supply. Credit scoring and information coordination can help mitigate selection problems, while incentive problems are better addressed by improved collection or repayment schemes (Dobbie & Skiba, 2012).

The theory explains that in the market, the party that possesses more information on a specific item to be transacted (in this case the borrower) is in a position to negotiate optimal terms for the transaction than the other party (in this case, the lender). The party that knows less about the same specific item to be transacted is therefore in a position of making either right or wrong decision concerning the transaction. Adverse selection and moral hazards have led to significant accumulation of non-performing loans in banks. In the presence of asymmetric information, a well-capitalized bank is less risky but profits are lower since they are perceived as safer (Auronen, 2003).

Pagano and Jappelli (1993) show that information sharing reduces adverse selection by improving banks information on credit applicants. Credit Reference bureaus (CRB) complement the fundamental role played by banks and other financial institutions in extending financial services within an economy. In Kenya, CRBs assist lenders to make faster and more accurate credit decisions. They collect, manage and disseminate customer information to lenders in the form of credit reports. These credit reports help lenders to decide whether to extend an applicant’s loan, credit card overdraft facility or extend any other product, which is reliant on customer’s ability to repay at a determined cost.

### 2.2.4 Portfolio Theory

Portfolio Theory is a theory on how risk-averse investors can construct portfolios to optimize or maximize expected return based on a given level of market risk, emphasizing that risk is an inherent part of higher reward. Portfolio theory of investment which tries to maximize portfolio expected return for a given amount of portfolio risk or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets. Portfolio theory was developed in 1950’s through the early 1970’s and was considered an important advance in the mathematical modeling of finance. Since then, many theoretical and practical criticism have been developed against it. This include the fact that financial returns do not follow a Gaussian distribution or indeed any symmetric distribution, and those correlations between asset classes (Opiokello, 2010)

In standard portfolio theory developed by Markowitz (1952) the optimal portfolio is selected solely based on financial returns. The most common method to include a social dimension in investment choice is screening. The idea is simple: From all available assets, investors choose the subset of assets they want to invest in. Positive screening selects the assets to invest in, whereas negative screening excludes assets which the investor does not want to fund under any circumstances.

## 2.3 Empirical Review

This section entails the review of the past literature and studies conducted on the automated credit scoring systems and loan performance. A review of the existing literature shows that, Einav, Jenkins and Levin (2013) conducted a study on the impact of credit scoring on consumer lending. They investigated the adoption of automated credit scoring at a large auto finance company and the changes it enabled in lending practices. The study found out that the adoption of credit scoring technology led to a large increase in profitability and improved repayment. Lending to the highest-risk applicants contracted due to more stringent down payment requirements, and lending to lower-risk borrowers expanded. The study also identified two distinct benefits of risk classification through automated credit scoring: the ability to screen high-risk borrowers and the ability to target more generous loans to lower-risk borrowers.

In Pakistan Samreen (2012) conducted a study to evaluate credit risk in commercial banks of Pakistan using automated credit scoring models. A credit scoring model was developed known as the Credit Scoring Model for Individuals (CSMI), which can be used by commercial banks to determine the creditworthiness of individual borrowers requesting for personal loans. The results of the developed credit scoring model were compared with the other statistical credit scoring techniques known as logistics regression and discriminant analysis. Type I and type II errors had been calculated for all the credit scoring models used. The results show that the proposed model “CSMI” had more accuracy rate with no errors as compared to other manual methods.

In Iran, Dastoori & Mansouri (2013) conducted a study to establish the effectiveness of automated credit scoring model for Iranian banking customers in forecasting creditworthiness of borrowers. The creditworthiness of the borrowers was determined through using financial information obtained, from 2006 to 2011. The results of the study indicated that the two fitted automated models were reasonable reliable in predicting the creditworthiness of banking customers.

Owizy (2013) evaluated the impact of credit management on financial performance of Nigerian banks, with particular reference to UBA Plc. Financial ratios as measures of bank performance and credit indicators were the data collected from secondary sources mainly the annual reports and accounts of sampled banks from 2004 - 2008. Descriptive, correlation and regression techniques were used in the analysis. The findings revealed that credit management has a significant impact on the profitability of Nigeria banks.

Byusa and Nkusi (2012)investigated effects of credit policy on bank performance in selected Rwandan Commercial banks. The aim of this study was to investigate the effects of credit policy on bank performance using data on selected Commercial Banks. The results obtained indicated that the Rwanda’s commercial banks increased their accounts, increased customer base and improved their financial indices, thereby maximizing their profits. However, inadequate competition in the banking system led to high spreads. Banks have unusually high and increasing average interest rate spreads and interest rate margins showing both highly poor competition and inefficiency.

Ntiamoah, Diana and Kwamega (2014) carried out a study on assessment of the relationship between credit management practices and loan performance using some selected microfinance institutions in the Greater Accra region of Ghana as a case study. Results of the study indicated that there was high positive correlation between the credit terms and policy, lending, credit analysis and appraisal, and credit risk control and loan performance.

Ayodele, Thomas, Raphael & Ajayi (2014) carried out a study on impact of credit policy on the performance of Nigerian Commercial Banks using Zenith Bank Plc as case study. Primary data was collected through questionnaires served on sixty (60) respondents of the bank. The findings from the study showed that having a good credit policy in place goes a long way in minimizing the incidence of bad debts.

In Kenya, Moti, Masinde, Mugenda and Sindani (2012) evaluated the effectiveness of credit management system on loan performance with a focus on Micro Finance Sector in Kenya due to high levels of non-performing loans. The study found out that high involvement of credit officers and use of borrower’s information in formulating credit terms was found to have a significant relationship with loan performance. The study recommended that the 5’cs model of client appraisal was important when appraising clients, therefore microfinance institutions should take a greater consideration on character of the client, capacity of the customer to repay, collateral attached as security, history of repayment, need assessment and size of the business.

In his study, Simiyu (2008) investigated on the techniques used by micro finance institutions in the management of credit risk in Kenya, and to examine the main challenges facing the micro finance institutions operating in Kenya in the management of credit risk. The study established that most microfinance institutions use 6C techniques of credit risk management, the study also revealed that understanding the organizations exposure to the customers is treated as critical by the micro finance institutions.The study established that majority of the institutions used credit matrix to measure the credit migration and default risk.

## 2.4 Conceptual Framework

A conceptual framework explains, either graphically or in narrative form, the main things to be studied, the key factors, constructs or variables, and the presumed relationships among them (Miles & Huberman, 1994). The conceptual framework therefore illustrates the interaction between independent variables and the dependent variable in the study. In this study, the independent variables are: client's financial information, client appraisal, credit terms and credit risk control measures while the dependent variable is loan performance.

**Independent Variables Dependent Variable**

**Client's Financial Information**

* Past Credit history
* Financial, non-financial parameters

**Client Appraisal**

* Ability to repay
* Risks involved (level of risk)

**Loan Performance**

* Timeliness of payments
* Default rates
* Irrecoverable loans

**Credit Terms**

* Interest rate charged
* Credit Size
* Credit period

**Credit Risk Control Measures**

* Collection Costs
* Risk based pricing
* Collateral

Figure 2.1: Conceptual Framework

**Source: Author: 2016**

# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter will look at the research methods that will be employed in the study in order to achieve the objectives of the study. This chapter covers the research design to be adopted, population of study, sample size and sampling technique, data collection instrument, pilot testing and data analysis procedures.

## 3.2 Research Design

The study will adopt a descriptive research design. Robson (2002) points out that descriptive study portrays an accurate profile of persons, events or situation. Chandran (2004) also states that descriptive study describes the existing conditions and attitudes through observation and interpretation techniques. Robson (2002) argue that descriptive research design is one of the best methods for conducting research in human contexts, because of portraying accurate current facts through data collection for testing hypothesis or answering questions to conclude the study. A descriptive study is concerned with finding out the what, where and how of a phenomenon.

The descriptive design will therefore be appropriate for this study since it will help in collecting data in order to answer the questions of the current status on how the automated credit scoring systems are affecting loan performance in commercial banks in Kenya.

## 3.3 Target Population

A population is defined as a complete set of individuals, case or objects with some common observable characteristic (Mugenda & Mugenda 2003). The target population will be credit officers in the credit, risk management and ICT departments in Co-operative bank, Nairobi.

## 3.4 Sampling Technique and Sample Size

Sampling is a procedure, process or technique of choosing a sub-group from a population to participate in the study. It is the process of selecting a number of individuals for a study in such a way that the individuals selected represent the large group from which they were selected (Mugenda & Mugenda, 2003). On the other hand, Kothari (2004) defines a sample as a small proportion of an entire population; a selection from the population.

## 3.5 Data Collection Instrument

The questionnaire will have closed questions. The closed ended questions will enable the researcher to collect quantitative data. The questionnaire will be divided into five sections. Section one will gather information on demographic information of the respondents; section two will cover questions to show the extent to which compliance costs affect implementation of transfer pricing policies by multinational companies in Kenya; section three will cover questions the extent to which threat of double taxation affects implementation of transfer pricing policies; section four will present questions on the extent to which loss of revenue affects implementation of transfer pricing policies while section five will cover questions on how the existing regulations and guidelines affects implementation of transfer pricing policies. The questionnaire will have a 1-5 likert scale questions whereby 5 will mean very great extent or a strong agreement with the statement while 1 will mean to a low extent or a strong disagreement with the statement.

The questionnaire is considered as the appropriate data collection instrument for this study since they provide a high degree of data standardization, they are relatively quick to collect information from people in a non-threatening way and they are cheap to administer. Questionnaires are also able to give a detailed answer to complex problems (Kombo & Tromp, 2006).

## 3.6 Data Collection Procedure

The study will collect primary data though a questionnaire. The data will be collected from the credit/loan officers and IT officer of Co-operative bank in Kenya. The researcher first will seek permission and consent to collect data from the management of the sampled organizations. Consents will be sought through use of a letter for data collection which will be obtained from University. After permission is granted, appointments will be made with the respective respondents. The researcher will administer the questionnaire through drop and pick later method. Personal administration of the questionnaire will give the researcher a chance to interpret and clarify questions in the questionnaire to the respondents. This will ensure that the respondents fully understand the questions before answering hence ensuring high response rate. A deadline will be set by which the completed questionnaires must be ready for data analysis.

## 3.7 Validity and Reliability of the Questionnaire

The developed questionnaire will be checked for its validity and reliability through pilot testing. Pilot test will be conducted to detect weakness in design and instrumentation and to provide alternative data for selection of a probability sample. The study intends to subject the questionnaire to 5 loan officers to participate in the pilot study. This presents 7.8% of the sample size. According to Mugenda and Mugenda (2003) a successful pilot study would use 1% to 10% of the actual sample size. The five respondents will be exempted from taking part in the actual study. The objectives of pre-testing will be to allow for modification of various questions in order to rephrase, clarify and or clear up any shortcomings in the questionnaires before administering them to the actual respondents. It will help the researcher to correct inconsistencies arising from the instruments, which will ensure that they measure what is intended.

Validity indicates the degree to which an instrument measures the construct under investigation (Saunders et. al., 2003). For a data collection instrument to be considered valid, the content selected and included must be relevant to the need or gap established. Internal validity of the questionnaire will be established by the research and supervisor reviewing the items. The instrument will also be subjected to other experts on transfer pricing policies. Before the actual study, the instruments will be discussed with supervisors. The feedback from the supervisors and the experts will help in modifying the instruments. This will ensure that the questionnaire collects reliable information and also improves the response rate.

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials (Mugenda & Mugenda, 2003). Reliability test measures the internal consistency of the questionnaire. An instrument is reliable when it can measure a variable accurately and obtain the same results over a period of time. Reliability of the questionnaire will be tested by Cronbach’s alpha test with the help of Statistical Package for SocialSciences (SPSS). A co-efficient of above 0.7 will imply that the instrument is sufficiently reliable for the measurement (Tavakol & Dennick, 2011).

## 3.8 Data Analysis and Presentation

The data collected through the questionnaire will be edited, coded, entered into SPSS which will also aid in the data analysis. The data will be analyzed using descriptive and inferential statistics. The descriptive statistics will include frequency distribution tables and measures of central tendency (the mean), measures of variability (standard deviation) and measures of relative frequencies. The inferential statistics will include a regression model which will establish the relationship between variables. The analyzed quantitative data will be presented using tables, charts and graphs.

The regression model will take the form:

Y= β0 + β1 χ1 + β2 χ2 + β3 χ3 + β4 χ4 + εi

Where: Y = Loan Performance

χ 1 =Client's financial information

χ 2 = Client appraisal

χ 3 = Credit terms

χ 4 = Credit risk control measures

β0 = the intercept (value of EY when X = 0)

β1-n = the regression coefficient or change included inYby each χ,

εi = error term

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# APPENDICES

## Appendix I: Budget

|  |  |
| --- | --- |
| **Budget Items** | **Cost (Kenya Shillings)** |
| Proposal development- Printing, stationery, internet costs | 12,000 |
| Data collection a) Research assistant fees  b) Stationery and printing | 15,000 |
| 5,000 |
| Data analysis and report a) Printing and stationery  b) Hard cover Binding | 5,000 |
| 6,000 |
| Transport Fuel to Campus, airtime | 8, 000 |
| Miscellaneous | 5,000 |
| **TOTAL BUDGET** | **KES 56,000** |

## Appendix II: Work Plan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Timelines**  **Activity** | **Jan - March 2017** | **March**  **2017** | **March-April**  **2017** | **April**  **2017** | **May-June**  **2017** |
| Proposal Development |  |  |  |  |  |
| Proposal Defense |  |  |  |  |  |
| Field Data Collection |  |  |  |  |  |
| Data analysis and Report Writing |  |  |  |  |  |
| Project Defense and Final Report Submission |  |  |  |  |  |