DECLARATION

I declare that this project report is my original work and has not been presented in any other university for examination.

Signed ___________________________ Date 03-03-2011

KIOKO P.M

D53/13183/05

This is to certify that this project report has been submitted with my approval as the university supervisor.

Signed ___________________________ Date 09-03-2011

MR.NGABA.D

This is to certify that this project report has been submitted with my approval as chairman of the department.

Signed ___________________________ Date 06-03-12

CHAIRMAN, DEPARTMENT OF ACCOUNTING AND FINANCE
DEDICATION

To my dear parents, brothers and sisters.

Thank you for all your financial and moral support over the years.

This is what has made this study possible.
ACKNOWLEDGEMENTS

Much appreciation goes to all those who offered me moral and practical support in the production of this work.

I am grateful to my supervisor Mr. Ngaba. D for the guidance and advice he gave me right from proposal writing up to this point.

To my parents, brothers and sisters for their encouragement, understanding and support.

To my uncle Mr. David Nguli under whose support I was able to start the masters programme.

Much to God for His abundant blessings and unending mercies.
ABSTRACT

Risk management is a cornerstone of prudent banking practice. All banks in the present day volatile environment are facing a large number of risks such as credit risk, liquidity risk, foreign exchange risk, market risk, interest rate risk among others. These risks may threaten a bank’s survival and success. From literature reviewed, effective credit risk management is lacking in most of the banking institutions. Credit risk assessment has been identified as one of the key skills required for successful banking operation. From literature reviewed, banks have been urged to engage in effective credit risk management techniques able to determine risk of default in their loan advances. One of these ways is through the use of credit scoring models in credit risk assessment.

The study sought to analyze credit risk assessment through credit scoring models within commercial banks in Kenya. It further sought to identify if there is any relationship between NPLs and credit scoring practices. Credit policy is also vital for effective risk management and was therefore analyzed. The study will be of great help to commercial banks, the public and academicians by providing further insights on credit scoring and credit risk assessment in banks. The study is a census therefore the population of the study consisted of all commercial banks operating within Nairobi. Data was collected using questionnaires which were administered to Personal banking officers of the various commercial banks through the headquarter offices. Descriptive data analysis techniques have been used in form of percentages and tables to show the various findings. Correlation analysis is used to determine the relationship between NPLs and credit scoring. These methods were chosen because the data collected is in frequencies as the variables are measured in categorical scale.

The study established that, 60.6% of the banks surveyed use credit scoring models during credit risk assessment of the various loan applicants while 39.4% do not use any credit scoring models on credit risk assessment. The study established that other methods used to assess credit risk are credit committee and analysis of financial statements like balance sheet and the profit and loss accounts incase of business loans. For personal loans, field observations on personal property and employment details are sometimes used. On the types of credit scoring models used, the study established that, risk adjusted return on capital model was the one mostly
used by banks at 60.6%. The study also established that, some banks use internally developed models for credit risk assessment. However, were not willing to disclose details about the models as part of their business strategies.

The study established that, there is a significant relationship between asset quality and use of credit scoring models. The correlation is at -0.773, implying a strong negative relationship between use of credit scoring models and size of asset quality ratio. Further analysis, on the same variables indicated that, banks which have low asset quality ratio indicate low levels of NPLs.
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title Page</td>
<td>i</td>
</tr>
<tr>
<td>Declaration</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>iv</td>
</tr>
<tr>
<td>Abstract</td>
<td>v</td>
</tr>
<tr>
<td>Table of contents</td>
<td>vi</td>
</tr>
<tr>
<td>List of acronyms</td>
<td>vii</td>
</tr>
<tr>
<td>List of figures</td>
<td>viii</td>
</tr>
<tr>
<td>Definition of terms</td>
<td>ix</td>
</tr>
<tr>
<td>Chapter 1 INTRODUCTION</td>
<td></td>
</tr>
<tr>
<td>1.1 Background</td>
<td>1</td>
</tr>
<tr>
<td>1.2 Statement of the problem</td>
<td>2</td>
</tr>
<tr>
<td>1.3.0 Research objectives</td>
<td>3</td>
</tr>
<tr>
<td>1.3.1 General objectives</td>
<td>3</td>
</tr>
<tr>
<td>1.3.2 Specific objectives</td>
<td>3</td>
</tr>
<tr>
<td>1.4 Research questions</td>
<td>3</td>
</tr>
<tr>
<td>1.5 Significance of the study</td>
<td>3</td>
</tr>
<tr>
<td>1.6 Scope and limitations of the study</td>
<td>4</td>
</tr>
<tr>
<td>Chapter 2 LITERATURE REVIEW</td>
<td></td>
</tr>
<tr>
<td>2.1 Overview of the Kenyan banking system</td>
<td>5</td>
</tr>
<tr>
<td>2.2.0 Non performing loans in the Kenyan banking sector</td>
<td>5</td>
</tr>
<tr>
<td>2.2.1 Causes of NPLs</td>
<td>6</td>
</tr>
<tr>
<td>2.2.2 Measures of asset quality</td>
<td>7</td>
</tr>
<tr>
<td>2.3.0 Risk management</td>
<td>7</td>
</tr>
<tr>
<td>2.3.1 Types of risks facing commercial banks</td>
<td>8</td>
</tr>
<tr>
<td>2.3.2 Credit risk management</td>
<td>9</td>
</tr>
<tr>
<td>2.3.3 Effective risk management</td>
<td>9</td>
</tr>
<tr>
<td>2.3.4 Challenges to sound risk management in Kenya</td>
<td>10</td>
</tr>
<tr>
<td>2.4.0 Credit control</td>
<td>10</td>
</tr>
<tr>
<td>2.4.1 The need for sound credit policy</td>
<td>10</td>
</tr>
<tr>
<td>2.4.2 Pricing credit risk</td>
<td>11</td>
</tr>
<tr>
<td>2.4.3 Early warning signs of loan delinquency</td>
<td>11</td>
</tr>
<tr>
<td>2.4.4 Controlling loan losses</td>
<td>11</td>
</tr>
<tr>
<td>2.5 Credit risk assessment</td>
<td>12</td>
</tr>
<tr>
<td>2.6.0 Credit scoring</td>
<td>13</td>
</tr>
<tr>
<td>2.6.1 Credit scoring models</td>
<td>14</td>
</tr>
<tr>
<td>2.6.2 Best credit scoring method</td>
<td>16</td>
</tr>
<tr>
<td>2.6.3 Benefits of credit scoring</td>
<td>16</td>
</tr>
<tr>
<td>2.6.4 Limitations of credit scoring</td>
<td>17</td>
</tr>
</tbody>
</table>
Chapter 3 RESEARCH METHODOLOGY

3.0 Introduction .............................................................................................................. 19
3.1 Research design ....................................................................................................... 19
3.2 Target population .................................................................................................... 19
3.3 Data collection procedures ..................................................................................... 20
3.4 Data analysis ........................................................................................................... 20

Chapter 4 DATA ANALYSIS AND PRESENTATION

4.0 Introduction .............................................................................................................. 21
4.1 Response rate .......................................................................................................... 21
4.2 Data analysis and interpretation of results .................................................................. 21
4.2.1 Frequency of banks reviewing credit policies ................................................. 21
4.2.2 Rating bank’s effectiveness in credit policy making ........................................... 22
4.2.3 Rating banks on whether policies are clear and simple .................................. 22
4.2.4 Rating banks on whether policies are specific ..................................................... 22
4.3 Credit scoring and credit risk assessment ............................................................... 23
4.3.1 Use of credit scoring models in credit risk assessment ..................................... 23
4.3.2 Types of credit scoring models used ................................................................. 23
4.3.3 When banks started using credit scoring models .............................................. 24
4.3.4 Reasons for using credit scoring models ............................................................ 24
4.4 Non-performing loans ............................................................................................ 25
4.4.1 Levels of NPLs .................................................................................................... 25
4.4.2 Reasons attributed to levels of NPLs ................................................................. 25
4.4.3 Rating banks in terms of credit risk assessment ............................................... 26
4.4.4 Relationship between NPLs and credit scoring .............................................. 27

Chapter 5 CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction .............................................................................................................. 28
5.1 Conclusions ............................................................................................................. 28
5.2 Recommendations .................................................................................................. 29
5.3 Suggestions for further study .................................................................................. 29

REFERENCES ............................................................................................................... 31

APPENDICES

Appendix 1 Questionnaire: ........................................................................................... 34
Appendix 2: Work plan .................................................................................................. 40
Appendix 3: Budget ........................................................................................................ 41
Appendix 4: List of banks ............................................................................................... 42
Appendix 5: Introduction letter ..................................................................................... 44
Appendix 6: List of banks surveyed and the credit scoring model used ................... 45
LIST OF ABBREVIATIONS

CBK - Central bank of Kenya
NPLs - Non performing loans
NBFIs - Non banking finance institutions
M.I.S - Management information system
CAMPARI - Character, Ability, Margin, Purpose, Amount, Repayment and Insurance
LIST OF FIGURES

Figure 1 - Model building process
Figure 2 - When banks started using credit scoring models
Figure 3 - Levels of NPLs
Figure 4 - Reasons attributed to levels of NPLs
Figure 5 - Rating in terms of credit risk assessment
DEFINITION OF TERMS

Risk is a concept that denotes a potential negative impact to some characteristic of value that may arise from a future event, or we can say that "Risks are events or conditions that may occur, and whose occurrence, if it does take place, has a harmful or negative effect". Exposure to the consequences of uncertainty constitutes a risk. In everyday usage, risk is often used synonymously with the probability of a known loss.

Risk management is a structured approach to managing uncertainty related to a threat, through a sequence of human activities including: risk assessment, strategies development to manage it, and mitigation of risk using managerial resources.

Credit risk is the risk of loss due to a debtor's non-payment of a loan or other line of credit (either the principal or interest (coupon) or both).

Credit risk management is the process of assessing risk in an investment. When the risk has been assessed, investment decisions can be made and the risk versus return balance considered from a better position.

Default occurs when a debtor has not met its legal obligations according to the debt contract, e.g. it has not made a scheduled payment, or has violated a loan covenant (condition) of the debt contract. Default may occur if the debtor is either unwilling or unable to pay their debt.

Non performing loans – refers to instances when loan borrowers default in schedule repayments due to unexpected misfortunes.

Credit scoring model – a model is a simplified description of a system or process. Credit scoring is a mathematical or statistical process of converting data about a prospective applicant into data which can be used to make a loan granting decision.

Policy- refers to broad bank statement which outlines how the bank intends to handle its various matters. Credit policy refers to the specific statements, guidelines and pronouncements and related issues associated with matters of bank credit process (credit policy).

Effectiveness (of risk management) - the contribution of risk management to the level of credit risk.
A banker or bank is a financial institution that acts as a payment agent for customers, and borrows and lends money.
CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Commercial banks have faced difficulties over the years for many reasons, the major cause of serious banking problems continues to be directly related to lax credit standards for borrowers, poor portfolio risk management or lack of attention to changes in the economic circumstances and competitive climate (CBK, Annual Supervision Report, 2000). According to Peter (2002), awarding credit is a journey, the success of which depends on the methodology applied to evaluate and award the credit. This journey starts from the application for credit and ends at the time the loan from the credit process is finally fully paid. The credit management process has got its smooth and rough stages and therefore needs to be effectively controlled for it to be successful.

During the 1980’s and 1990,s when the financial and banking crises became worldwide, new risk management banking techniques emerged. To be able to manage the different types of risks, one has to define them before one can manage them. The risks that are most applicable to banks are: credit risk, interest rate risk, liquidity risk, market risk, foreign exchange risk and solvency risk ((Bessis, 1998).

The Kenyan banking industry is diverse in terms of institutions, size and structure. Commercial banks in Kenya dominate this industry owing to their large size and being the most diversified of the financial intermediaries. This is on the basis of assets held and liabilities issued.


Credit risk is the oldest form of risk in the financial markets. If credit can be defined as “nothing but the expectation of a sum of money within some limited time”, then credit risk is the chance that this expectation will not be met (Sinkey, 1992). All banks have a need to spread overall lending risk as widely as possible to reduce exposure to any one trade or industry and therefore reduce the overall exposure risk and profitability.
They reduce portfolio risk by making advances to a wide variety of industries, spreading the risk among a broad client base. Being very aware of the risk of over concentration in any one sector, banks usually operate within industry threshold, limiting credit exposure to achieve the best mix of individual and portfolio safety (Mutwiri, 2006).

Risk management and assessment are the key skills of any successful banking operation. The risk management usually falls into a centralized or decentralized system. Such systems allow banks to evaluate and track risks on an industry, individual or portfolio basis (CBK, Risk Management survey, 2004).

Measurement of credit risk can be considered from the perspective of probability theory. The process of measuring loss potentials and their impact on banks and financial institutions leads to credit control and this involves a serious risk analysis, assessment and evaluation of the prospective customers before granting them credit (Mudegu, 2003).

A way of improving the credit risk management and credit analysis decision making involves the borrower being granted credit facilities on the basis of credit worthiness. Credit scoring models are some of the techniques used to determine the credit worthiness of borrowers. Credit scoring is a mathematical or statistical process of converting data about a prospective applicant or customer behavior into data which can be used to make a decision (Bill, 1998). Using historical data and statistical techniques, credit scoring tries to isolate the effects of various applicant characteristics on delinquencies and defaults (Mester, 1997). The method produces a “score” that the bank can use to rank its loan applicant or borrowers in terms of risk.

1.2 STATEMENT OF THE PROBLEM
Non-performing loans continue to be a problem with all commercial banks in Kenya (CBK, Monthly Economic review, January, 2009). Obiero (2004) found out that, out of the 39 banks which failed during the period of 1984 and 2004, 37.8 % collapsed mainly due to poor quality lending. According to CBK (2005) Banking Supervision Report, each bank should develop an effective and sound credit risk management to be able to contain credit risk where a comprehensive assessment of the risk profile of the customer must be undertaken during the loan process. According to the bank, the effectiveness of credit risk measurement process is
dependent on the quality of management information systems and the underlying assumptions supporting the models.

One of the ways that banks can use to achieve effective credit risk assessment is through credit scoring where each borrower is marked on a range of indicators thought to have some bearing on default risk (Gwilym, 2003). In developed world, the use of credit scoring by banks has been widely documented.

This study sought to analyze credit risk assessment through credit scoring models among commercial banks in Kenya. Further, it sought to assess the relationship between NPLs and credit scoring practices.

1.3 RESEARCH OBJECTIVES

1.3.1 GENERAL OBJECTIVE
This study aimed at examining the degree to which credit scoring practices are used within commercial banks in Kenya for credit risk assessment for loan applicants.

1.3.2 SPECIFIC OBJECTIVES
The specific objectives of the study were to:

i) identify the credit scoring methods used by commercial banks in Kenya for credit risk assessment.
ii) determine the relationship between NPLs and credit scoring practices.

1.4 RESEARCH QUESTIONS
The study used the following research questions:

i) Which credit scoring methods do commercial banks within Kenya use in credit risk assessment?

ii) What is the relationship between NPLs and credit scoring practices within Kenyan commercial banks?

1.5 SIGNIFICANCE OF THE STUDY
The findings of this study will be of great benefit to:

a) Commercial banks and other institutions offering credit services by providing data on the extent of use of credit scoring among the different commercial banks in Kenya.
b) Academicians: Not many studies have been undertaken on credit scoring in Kenya. The study will thus provide the necessary background for further studies to academicians.

c) Public by providing more insights on the area of credit scoring during credit assessment. For example on how to improve ones score incase of personal loans.

1.6 SCOPE OF THE STUDY
The study sought to examine credit scoring practices within commercial banks. However only those commercial banks with branches within Nairobi town were examined for the analysis.
CHAPTER TWO
LITERATURE REVIEW

2.1 OVERVIEW OF KENYAN BANKING SYSTEM

Commercial banking took root in Kenya at the turn of the 20th century with the portioning of Africa by the European imperial powers. The first bank to establish operations was the National Bank of India which started a branch in Mombasa in 1896. By 1972, there were a total of twelve commercial banks operating in the Kenyan market. According to the CBK, Economic Survey (2007), there are 45 commercial banks, 2 mortgages firm institutions, 1 NBFIs and 1 building society. There are 95 foreign exchange bureaus operating in the Kenyan Market according to the review.

According to CBK, Economic Survey (2007), the banking sector has witnessed re-packaging of banking and financial services to satisfy the ever changing needs of customers. This has resulted in the rapid growth of consumer banking products. More banks are increasingly offering new banking products such as the unsecured personal loans, auto loans, unsecured professional loans, Safari savings accounts, Jumbo junior accounts among others. An increased number of institutions are offering e-banking as well as offering services for non-residents.

2.2 NON PERFORMING LOANS IN KENYAN BANKING SECTOR

According to CBK (2004), the balance sheet of the banking sector expanded with total assets increasing by 14% to Ksh.546 billion as at end of June 2004 from Ksh.477.7 billion in June 2003. Loans and advances rose by 19% mainly due to reduced lending rates and increased lending by commercial banks of particularly unsecured personal loans following aggressive marketing campaigns. NPLs were estimated at Ksh.72.6 billion or 24% of all loans at the end of June 2004, compared to Ksh.75.4 billion or 28% as at June 2003. The relative decline in NPLs was attributed to be the repayment and write-offs of previously non-performing advances and decrease in new lending.
2.2.1 CAUSES OF NPLS

According to CBK Annual Report (2004), the following are the causes of NPLs,

(i) Poor and unprofessional credit evaluation

With due respect to lending decisions made in the past by the financial sector, a lot of emphasis has been on security than other similar important considerations. There are instances in the past when it was easier to get a loan from financial institutions as long as the borrower has security to be charged than the ability to service the loan. Cash flow projections, viability of the projects, character of the borrowers, previous loan completion and ability to repay were not considered as important. Hence, a number of banks ended up with many NPLs due to incomplete, poor and unprofessional credit assessment and evaluation.

(ii) Adverse economic conditions

Kenyan economy has been performing very poorly in the last decade or so and continues to decline. This has to a large extent been a major contribution to the bad loan scenario.

(iii) Insider borrowing

Major shareholders, directors and members of staff in many instances contribute to NPLs because they are not subjected to normal objective credit assessment before disbursement of loans to them.

(iv) Political Patronage

The majority of debtors especially owe money to state owned banks and financial institutions are political debtors who borrow money with no intention of repayment. The implications of this scenario are serious considering the fact that most of the debt owed to these banks and financial institutions are in the hands of such people. The other issue is that, most of this money is not invested in productive activities. (Market Intelligence Banking Survey, 2001)

(v) Inability to enforce covenants

The courts have become a major bottleneck to the realization of securities by banks when failure in loan performances requires it. The required statutory notices to defaulters (three in number) take seven months. This dissuades banks from lending
and they take high valued collateral to cover the risks. Although banks give sufficient notices to sell securities, costly and inefficient delays are being occasioned by court injunctions given usually on the day of sale, stopping the realization (Hempel et al, 1994).

2.2.2 MEASURES OF ASSET QUALITY

NPLs are those loans that are not being serviced as per the loan contracts and expose the banks to potential losses, (CBK, Annual Report, 2004). A mismatch in management of major balance sheet items can cause banks to close down. Changes in the relative structure of assets and liabilities should be a conscious decision of banks policy makers and in most cases the board of directors.

According to Simonson et al (1986), what differentiates well managed banks from badly managed banks is the proportion of the delinquent loan books. Banks must do everything they can to minimize loan delinquency. This requires them to continuously review individual exposures in order to monitor loan quality and reduce losses.

The success of individual banks in Credit risk Management is largely reflected in the proportion of NPLS to gross lending. Asset quality which is measured by the Asset quality Ratio is an indicator of the level of NPLS, (Thygerson, 1995) it’s calculated as follows,

\[
\text{Asset quality ratio} = \frac{\text{Total NPLs}}{\text{Total Loans}}
\]

The smaller the ratio, the better the assets quality.

2.3 RISK MANAGEMENT.

According to Al-Tamimi (2007), risk management is a cornerstone of prudent banking practice. All banks in the present day volatile environment are facing a large number of risks such as credit risk, Liquidity risk, foreign exchange risk, Market risk and interest rate risk among others, for this reason efficient risk Management is absolutely required. Carey (2001) indicates in this regard that risk management is more important in the financial sector than in other parts of the
The purpose of financial institution is to maximize revenues and offer the most value to shareholders by offering a variety of financial services and especially by administering risks.

2.3.1 TYPES OF RISKS FACING COMMERCIAL BANKS

According to Oldfield and Santomero (1997), it has been argued that risks facing all financial institutions can be segmented into three separable types from a management perspective. These are,

(i) risks that can be eliminated or avoided by simple business practices.

(ii) risks that can be transferred to other participants.

(iii) risks that must be actively managed at the firm level.

Bessis J. (1998) divides banking risks into six different categories. Liquidity risk, interest rate risk, insolvency risk, operational risk and credit risk. For a bank, liquidity risk is the point where the liquid assets that make up a buffer are diminished. The interest rate risk is when the earnings of a bank are at risk due to movements in the interest rate. This interest rate risk can be managed by hedging with various derivatives such as interest rate, futures and options. Market risk refers to the market deviations that may negatively influence the value of the portfolio during the liquidation period. Market risk can be handled with different derivatives and insurance products. The operational risks are the risks connected to day to day operation of the bank. The solvency risk is the risk of exposing the bank to situations where it is unable to cover its payment obligations. Credit risk is the risk that customers default, that is fail to comply with obligations to service debt. Credit risk is also the risk of a decline in the credit standing of counterparty.

According to Saunders (2002), other types of risks facing banks include country risk, event risk, and technological risk. Technological risk occurs when technological investments do not produce the anticipated cost savings in economies of scale. The objective of technological expansion is to lower operating costs, increase profits and capture new markets. Country risk occurs when repayment from foreign borrowers is interrupted because of interference from foreign governments. Event risk occurs due to sudden and unexpected changes in financial market condition because of war, revolution or sudden collapse, such as stock market crashes.
2.3.2 CREDIT RISK MANAGEMENT

The importance of credit Risk Management has never been more important with the current high default rates and bankruptcies. Indeed Banks and other financial institutions offering credit are spending considerable time in the subject because of the increased emphasis on sophisticated risk management techniques, refinement in credit scoring techniques, development of offensive credit mitigation techniques among others (Altman, 2002).

The largest source of credit risk is loans although credit risks exist in other activities of the institution. On average, the size of the loan portfolios constitutes 63% of the banks assets in Kenya. This renders Credit risk currently the most significant risk to the local banking sector. An effective and sound credit risk management is thus critical to the success of the sector (CBK, Risk Management Survey, 2004).

2.3.3 EFFECTIVE RISK MANAGEMENT

Butterworths (1990) asserts that, effective risk management in financial institutions is the key to the future success in banking. The risk management framework encompasses the scope of risks to be managed, the processes and procedures to manage risk and the roles and responsibility of individual involved in risk management. The framework should be comprehensive enough to capture all risks a bank is exposed to and have flexibility to accommodate any change in business activities.

An effective risk management framework should clearly define risk management policies and procedures covering risk identification, measurement, monitoring, reporting and control (Hempel et al, 1994). According to CBK, Bank Supervision Annual Report (2005), effective risk management requires managing credit risk across the loan portfolio on a loan to loan basis. Effective risk identification starts with the evaluation of individual Loans. Rating the risk of individual loans in timely credit evaluation is fundamental to loan portfolio management. According to the report, the elements of a sound risk management system includes the following,

- adequate board and management oversight.
- adequate policies, procedures and strategic lending goals including lending limits.
adequate portfolio monitoring, risk assessment and management information system (M.I.S)
• comprehensive internal controls.

2.3.4 CHALLENGES TO SOUND RISK MANAGEMENT IN THE BANKING SECTOR IN KENYA

Several challenges have been identified by the CBK 2000 risk management survey. They include the following:

• Lack of appropriate systems that can monitor compliance with internal control policies and limits on timely basis.
• risk control functions and business operations are not well segregated, leading to conflict of interest in risk management.
• the presence of Board members who do not possess sufficient skills and knowledge to industrial baking risk, renders the Board less effective in risk management.
• limited source of good information on credit.
• Customers who at times give dishonest and inaccurate financial information.

2.4 CREDIT CONTROL

2.4.1 THE NEED FOR SOUND CREDIT POLICY.

According to Simonson et.al (1986) a sound credit policy would help improve prudential oversight of asset quality, establish a set of minimum standards to apply a common language and methodology (Assessment of risk, policy, documentation and ethics) for measurement and reporting of non-performing assets, loan classification and provisioning. The credit policy should set out the banks lending philosophy and specific procedures and means of monitoring the leading activity.

According to CBK (2005) in its risk management guidelines to commercial banks, an effective credit policy is the one that defines the credit concentration, limits and exposures the organization is willing to assume. These policies should be well documented to enable banks to take adequate measures to ensure concentration risk is mitigated. About policies on credit assessment, there must be a clear understanding of the borrower or counter-party and adequate
information must be obtained to enable a comprehensive assessment of the risk profile of the customer. Lack of adequate data and information in respect of a borrower would normally lead to poor lending decisions.

2.4.2 PRICING CREDIT RISK.

Spencer (1990) observes that because lending represents the central activity of banks and underpins their profitability, loan pricing tends to be the focal points of both revenues and costs. Sinkey (1992) states that in a competitive environment, interest rates charged by individual banks must be priced competitively taking into account credit risk and interest rates. The common practice in banks is to peg lending rates on the Treasury Bills rate. Each bank quotes a base rate which is normally equal to the T-bill rate plus 2 to 5 basis points, depending on the banks cost of funds and operating efficiency plus a premium based on perceived risk.

2.4.3 EARLY WARNING SIGNS OF LOAN DELIQUENCY

According to Rouse (2002), information which leads a lender to suspect that a borrower is in a financial difficulty can come from many sources but will usually arise from carrying out monitoring and control procedures. Some of the signs include late payment of principal and interest, unauthorized overdraft excess, significant changes in account turnover, hardcore balances, unpaid cheques, high gearing ratio, operating losses, abnormal delays in submitting financial statements, and unexplained change borrowers’ attitude towards the bank among others. This information may be obtained from internal records through interviews with the borrowers, audited accounts and management accounts.

2.4.4 CONTROLLING LOAN LOSSES

Gill et al (1989) states that, credit analysis has not progressed to the point where it is possible to predict with absolute accuracy whether or not a loan will be repaid as agreed. Invariably commercial banks find a certain proportion of their loans become delinquent. According to Simonson et al (1986), the basic risk of the lending function is not entirely bad; commercial banks would be remiss in not bearing such risk in the course of underwriting a variety of business enterprises and consumer needs.
Sinkey (1992), states that commercial banks must maintain surveillance of its loans. The frequency of reviewing individual loan exposures depends on the size and quality of the loans. Large poor quality loans must be reviewed frequently. The importance of periodic loan review is that, the bank is able to detect actual or potential problem loans as early as possible and act on them appropriately. Once a loan exposure has been found to be facing difficulties, immediate action should be taken.

2.5 CREDIT RISK ASSESSMENT

Bank lending is an art as well as a science, whose success depends on technical knowledge and on an aptitude to assess both the credit worthiness of a potential borrower and the merits of the proposition to be financed (Kenneth Toft, 1986).

According to Saunders (1996), banks need to gather adequate information about potential customer’s to be able to calibrate the credit risk exposure. The information gathered will guide the bank in assessing the probability of borrower default and price the loan accordingly. Much of this information is obtained during loan documentation. The bank can go beyond this information and seek additional information from third parties such as credit rating agencies and credit reference bureaus.

Rouse (1989) states that applying CAMPARI technique during initial assessment of the borrower will help in determining whether a loan is good or bad, recoverable or not recoverable. CAMPARI is a technique by which the viability of a proposal is assessed and evaluated. The acronym CAMPARI stands for Character (says a lot about the probability of a loan arrangement going sour), Ability (borrower’s ability in managing financial affairs), Margin (the bank should obtain reasonable return in view of the risk taken), Purpose (the reason for application should be acceptable to the bank), Amount (there must be a justification for the amount requested), Repayment (the source of repayment should be clear), and Insurance (security is necessary incase the repayment proposals fail to materialize.

According to Pandey (2001), to estimate the probability of default in a customer, the credit manager should consider the following; Character, which is the customer’s willingness to pay. The manager should judge whether the customers will make honest efforts to honor their credit obligations. The moral factor is of considerable importance in credit evaluation in practice. The
second is capacity which refers to the customer’s ability to repay. This may be judged by assessing the customer’s capital and assets which he may offer as security. The manager should determine the real worth of assets offered as collateral (security). The borrower’s history may also be considered. The third is condition which refers to the prevailing economic and other conditions which may affect the customer’s ability to pay. Adverse economic conditions can affect the ability or the willingness of a customer to pay. The fourth is capital, which refers to the financial resources obtained from financial records that a company may have in order to deal with its debt. Many analysts would make this portion the most important one. Weight is given to balance sheet items and components such as working capital, net worth and cash flow. The last one is collateral or guarantees as an additional form of security against the loan. This is the secondary form of repayment should the borrower be unable to repay.

According to Gwilym (2003), the process of credit risk assessment entails some form of credit scoring where each borrower is marked on a range of indicators thought to have some bearing on default risk. An overall score is then calculated and used to; place the borrower in an appropriate risk group. Indeed, according to Bessis J. (1998), credit scoring models can be used in minimization of the credit risk attributable to an individual customer.

2.6 CREDIT SCORING

Credit scoring is a statistical method used to predict the probability that a loan applicant or an existing borrower will default or become delinquent. The method introduced in 1950’s is now widely used for consumer lending, especially to credit card users and is becoming more widely used in commercial banks (Mester, 1997)

The information about the borrower is obtained from their loan applications and from credit bureaus. This may include applicants monthly income, out standing debt, financial assets, how long the applicant has been on same job, whether the applicant rents or owns a home, among others. Regression analysis relating loan performance to these variables is used to pick which combination of factors best predicts delinquency or default and how much weight should be given to each of these factors (Fair, Isaac). The process of credit scoring is very important for banks as they need to segregate ‘good borrowers’ from ‘bad borrowers’ in terms of their creditworthiness.
2.6.1 CREDIT SCORING MODELS

The methods generally used for credit scoring are based on statistical pattern recognition techniques. Credit scoring in its automated form is often the only way to assess creditworthiness, as banks do not have enough resources to treat each small exposure individually (Vojtek and Evzen, 2005).

To build a good scoring model, developers need sufficient historical data which reflects loan performance in periods of both bad and good economic times. During the model building process, the statistical application would use information about the existing customers to build and validate the model. In the end, the result is a model that would take details about the customer as inputs and generate an output (Hand and Henley, 1997).

According to Abedi (2002), credit scoring models used by banks to improve risk assessment include the following, Linear Discriminant Models which divide borrowers into low or high default risk classes, contingent on their observed characteristics. It provides a score that separates potentially good loans from weak loans. Altman (1968), who was the first to apply this model, constructed the so called Z-score, which is a linear combination of several explanatory variables for the purpose of the corporate credit granting problem. The second category includes linear probability models which use past data such as accounting ratios as inputs into a model to explain repayment experience on old loans. The relative importance of the factors used in explaining past repayment performance are used to forecast probability on new loans. The third
category includes option pricing theory models which start with the observation that a borrower's limited liability is comparable to a put option written on the borrower's assets with strike option equal to the value of the debt outstanding. If in future, the value of the borrowers' assets fall below the value of the outstanding debt, then the borrower may default. The models infer the probability of a firm to default from an estimate of the firm's asset price volatility which is usually based on the observed volatility of the firm's equity prices. The fourth category is the risk adjusted return on capital models. This is a new credit risk model which measures how much risk the bank is taking. It helps to determine if returns are providing adequate compensation for risk and assesses if the bank is providing shareholders with value added through its participation in the business. The last are neural networks which is a mathematical representation inspired by the human brain and its ability to adopt on the basis of the inflow of new information. Mathematical, it's a non-linear optimization tool. According to Altman et al (1994), neural networks allow for some learning through experience to discern the relationship between borrower characteristics and the probability of default and to determine which characteristics are most important in predicting default.

2.6.2 BEST CREDIT SCORING METHOD

According to Hand and Henley (1997), there is no overall 'best' method. What is best will depend on the details of the problem: On the data structure, the characteristics used, the extent to which it is possible to separate the classes by using those characteristics and the objective of the classification.

Classification accuracy, however measured is only one aspect of performance. Others include the speed of classification, the speed with which a score-card can be revised and the ease of understanding of the classification method and why it has reached its conclusion. Neural networks are well suited to situations where we have a poor understanding of the data structure. This is because they combine automatic feature extraction with the classification process to yield estimates of the parameters (Hand, 1998).

2.6.3 BENEFITS OF CREDIT SCORING

Credit scoring is both faster and less expensive than traditional underwriting. It reduces the bank's loan processing time (Lawson, 1995). Reducing processing time reduces the personnel
cost per loan to the bank making small business loans more attractive and profitable. According to Somerville (1997), spending less time on routine loans may also allow loan officers to spend more time on marginal applicants that need individual attention.

Credit scores can also be used by lenders in monitoring loans. This reduces monitoring costs and allows banks to make loans outside their branch footprints, thereby reducing the cost of lending. Credit scoring may also be less costly in terms of time spent by applicants gathering the information needed to complete the application, because customers need only to provide the information used in the scoring system. This encourages applicants for smaller loan amounts (Mester, 1997).

Credit scoring improves the objectivity in loan approval process. The scorecard makes it easy for banks to document the relationship between the criteria and creditworthiness of the applicant in the case of factors having a disparate impact on a protected class of applicants (Mester, 1997). According to Douglas et al (1998), credit scoring allows the bank to accept the clearly good customers and reject the clearly bad customers very quickly. It also allows different loan processors to apply consistent standards across all credit applicants and makes changing of the standards very easy.

2.6.4 LIMITATIONS OF CREDIT SCORING

Individual with higher credit scores are offered different services than those with lower scores. Individuals with lower credit scores are targeted with sub prime loans bearing higher interest rates. (Mester, 1997). He further adds that, the accuracy of the scoring systems for under represented groups is still an open question. The accuracy of the system will depend on the manner in which it was developed and that it works best when applied to large population of loan applicants (Douglas et al, 1998).

2.7 SUMMARY OF LITERATURE REVIEW

From the literature reviewed, there are shortcomings in the credit risk management within Kenyan commercial banks. It started by giving an overview on the Kenyan banking systems and NPLs and goes further to identify the causes of NPLs within Kenyan commercial banks. From literature reviewed, risk management has been identified as the cornerstone of prudent banking
practice. In the chapter, an indepth analysis and discussion on credit risk management and its importance to commercial banks has been undertaken. Credit risk assessment through credit scoring models has also been reviewed. From the literature reviewed, very little has been done by independent researchers on the above area in the Kenya and therefore, this study seeks to provide information on the current state with regard to credit scoring methods used by commercial banks in Kenya in carrying out credit risk assessment on its loan applicants.

2.8 CONCEPTUAL FRAMEWORK

The diagram below links credit scoring, credit policy and NPLs. From the literature reviewed in relation to credit risk assessment, the three factors have been dealt with in isolation and hardly any information is available that clearly links all of them.

Credit Scoring

Credit Policy

NPLs

1. Decisions by board of directors
2. Limited financial resources
3. Political stability

Independent variables

Intervening variables

Dependent variable

(Source: Author, 2010)
From the diagram, credit scoring and credit policy are the independent variables while non-performing loans is the dependent variable. The presence of intervening variables such as political stability in the country, decisions by the board of directors and limited financial resources adversely affect the effectiveness of credit risk assessment. To measure the level of non-performing loans, asset quality ratio for each bank will be calculated. Credit policy and credit scoring will be measured using ordinal scale whereby the sum total of each bank responses to questionnaire items will be calculated in order to answer research questions of the study.
CHAPTER THREE
RESEARCH METHODOLOGY

3.0 INTRODUCTION

The aim of this chapter is to describe the data collection procedures and data analysis methods used in the study. The chapter is divided into the following parts; research design, target population, sample size and sampling strategy data collection procedures and data analysis techniques. Data collection procedures and analysis were employed in order to address the objectives of this study.

3.1 RESEARCH DESIGN

The research design used was descriptive because the study sought to analyse credit risk assessment through credit scoring models by the commercial banks in Kenya. It further sought to determine if there is any relationship between the use of credit scoring models and non-performing loans. Also given the time, budget allocated and taking cognizance of the fact that educational research contains many variables that cannot realistically be controlled, then descriptive research design is the most appropriate. Indeed, Mugenda and Mugenda (1999) assert that descriptive research determines and reports the way things are.

3.2 TARGET POPULATION

The study population included all the 48 commercial banks operating in Kenya as listed by the CBK website (www.centralbank.go.ke). The study is a census hence the whole population of 48 commercial banks was included. A census was appropriate since the target population was small hence manageable.

The respondents were the personal banking officers, credit officers and loan analysts within the respective banks where one questionnaire per bank was administered through the headquarters of each bank. The respondents were selected based on their knowledge and experience in the respective banks. The information generated is assumed to be representative of the views of all the officers which they represent and is thus be regarded as sufficient to provide a holistic picture of the problem investigated.
3.3 DATA COLLECTION PROCEDURES

Data collected was both primary and secondary. Primary data was collected using questionnaires which were administered to the branch managers and loan officers in the various banks through the headquarters. The questionnaires were semi-structured and based on both open-ended and closed-ended questions of both substantive and theoretical nature. Secondary data was obtained from existing literature such as published annual reports, journals, books and other relevant publications.

3.4 DATA ANALYSIS TECHNIQUES

Completed questionnaires were reviewed and edited for completeness, coded, labeled and keyed into the computer for statistical analysis using the Statistical Package for Social Scientists (SPSS). Descriptive data analysis techniques have been used in form of frequency distribution tables, averages, percentages, graphs and tables to show the various findings. Asset quality ratio for the banks is used as the indicator of non performing loans. Correlation analysis is used to show the relationship between non performing loans and credit scoring practices. The methods were chosen because the data collected is in frequencies as the variables are measured in categorical scale and no assumptions are made about the data.
CHAPTER FOUR

PRESENTATION INTERPRETATION AND DISCUSSION OF THE FINDINGS

4.0 Introduction

This chapter describes the analysis of data and presents research findings. The results are presented in the form of frequency distribution tables and graphs.

4.1 Response rate

A total of 48 questionnaires were administered to the various banks and the results of the response rate are as shown in table 4.1 below.

Table 4.1 Response rate

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responded</td>
<td>33</td>
<td>68.75</td>
</tr>
<tr>
<td>Didn’t respond</td>
<td>15</td>
<td>31.25</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>100</td>
</tr>
</tbody>
</table>

The response rate was at 68.75% as out of the 48 respondents who were surveyed, only 33 responded as illustrated below in table 1. During the study, five banks indicated that they don’t take questionnaires on issues pertaining their credit policies and operations.

DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.2.1 Frequency of bank reviewing its credit policy

The respondents were asked to indicate the frequency of reviewing the banks credit policy and the results are shown in table 4.2.1 below.

Table 4.2.1 Frequency of bank reviewing its credit policy

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quarterly</td>
<td>7</td>
<td>21.2</td>
<td>21.2</td>
<td>21.2</td>
</tr>
<tr>
<td>Semi-annually</td>
<td>10</td>
<td>30.3</td>
<td>30.3</td>
<td>51.5</td>
</tr>
<tr>
<td>Annually</td>
<td>16</td>
<td>48.5</td>
<td>48.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The frequency above indicates that 48.5% of the banks surveyed review their credit policy annually, 30.3% review credit policy semi annually while 21.2% review their credit policy quarterly. The study further established that, 69.7% of banks surveyed use regular staff meetings to create employee awareness on credit risk while 54% use...
trainings, 48% use credit manuals to pass information on credit risk and 24.3% of the banks surveyed use supervision at one to one basis to create employee awareness about credit risk.

4.2.2 Banks effectiveness in credit policy making
The respondents were asked to rate their respective banks’ effectiveness in credit policy making and the results are shown in table 4.2.2 below

Table 4.2.2 Rating banks effectiveness in credit policy making

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>11</td>
<td>33.3</td>
<td>33.3</td>
<td>33.3</td>
</tr>
<tr>
<td>Agree</td>
<td>19</td>
<td>57.6</td>
<td>57.6</td>
<td>90.9</td>
</tr>
<tr>
<td>Disagree</td>
<td>3</td>
<td>9.1</td>
<td>9.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

The table above indicates that, 33.3% of the respondents strongly agree that, their banks have effective and recognized leadership in credit policy making while 57.6% agree. However, 9.1% disagree that their banks have effective and recognized leadership in credit policy making.

4.2.3 Policies being clear and simple
Here, the respondents were asked to rate their respective banks on whether credit policies are clear and simple and the results are shown in table 4.2.3 below.

Table 4.2.3 Rating banks in terms of policies being clear and simple

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Strongly agree</td>
<td>13</td>
<td>39.4</td>
<td>39.4</td>
<td>39.4</td>
</tr>
<tr>
<td>Agree</td>
<td>14</td>
<td>42.4</td>
<td>42.4</td>
<td>81.8</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>18.2</td>
<td>18.2</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

From the frequency above, where the respondents were required to state whether policies within their banks were conceptually clear and simple to understand, 81.2% of the banks surveyed fall within the range of strongly agree and agree while 18.2% indicated that they are poor in formulating policies which are conceptually clear and simple. The inference then is that, in a significant number of banks the policies made are conceptually clear and simple to the implementers.
4.2.4 Policies being specific on who does what and how

Here, the respondents were asked to rate their respective banks on whether credit policies are specific on who does what and how and the results are shown in table 4.2.4 below.

Table 4.2.4 Rating banks in terms of policies being specific on who does what and how

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>15</td>
<td>45.5</td>
<td>45.5</td>
<td>45.5</td>
</tr>
<tr>
<td>Agree</td>
<td>18</td>
<td>54.5</td>
<td>54.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

From the frequency above, where respondents were required to state whether policies clearly specified on who does what and how in the banks, 45.5% of the banks surveyed strongly agree while 54.5% agree in having policies which are clearly specified on who does what and how. The deduction then is that majority of the banks have policies with defined roles and thus negligible conflicts during execution.

4.3 Credit scoring and credit risk assessment

This part of the study sought to gather information on the use of credit scoring models for credit risk assessment within commercial banks in Kenya. The results are as shown below.

4.3.1 Banks use of credit scoring models

Here, the respondents were required to indicate whether their respective banks use credit scoring models for credit risk assessment and results are as shown in table 4.3.1 below.

Table 4.3.1 Use of credit scoring models in credit risk assessment

<table>
<thead>
<tr>
<th>Valid</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>20</td>
<td>60.6</td>
<td>60.6</td>
<td>60.6</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>39.4</td>
<td>39.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>33</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

From table above, where respondents were required to indicate whether their banks use credit scoring models for credit risk assessment, 60.6% of the banks surveyed indicated that, they use credit scoring models during credit risk assessment of the various loan applicants while 39.4% do not use any credit scoring models on credit risk assessment. The study established that other methods used to assess credit risk are credit committee and analysis of financial statements like balance sheet and the profit and loss accounts.
incase of business loans. For personal loans, field observations on personal property and employment details are sometimes used.

4.3.2 Types of credit scoring models used by commercial banks

Here, the respondents were required to indicate the types of credit scoring models used for credit risk assessment and results are as shown in table 4.3.2 below.

Table 4.3.2 Credit scoring models used by commercial banks

<table>
<thead>
<tr>
<th>Model</th>
<th>% of respondents using the model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Linear probabilistic models</td>
<td>27.3</td>
</tr>
<tr>
<td>2. Linear discriminate models</td>
<td>21.2</td>
</tr>
<tr>
<td>3. Risk adjusted return on capital models</td>
<td>60.6</td>
</tr>
<tr>
<td>4. Option pricing models</td>
<td>30.3</td>
</tr>
<tr>
<td>5. Neural networks</td>
<td>0</td>
</tr>
</tbody>
</table>

On the types of credit scoring models used, the study established that, risk adjusted return on capital model was the one mostly used by banks at 60.6%. However, it emerged that, some of the banks use two or more models in credit risk assessment depending on the types of loans being appraised. None of the commercial banks surveyed reported using neural networks for credit risk assessment. The study also established that, some banks use internally developed models for credit risk assessment. However, they were not wiling to disclose details about the models as part of their business strategies.

4.3.3 When banks started using credit scoring models

Here, the respondents were required to indicate the years when their banks started using credit scoring models used for credit risk assessment and results are as shown in figure 4.3.3 below.

Figure 4.3.3 When banks started using credit scoring models
From the figure above, the respondents were required to indicate when the banks started using the credit scoring models. From the study, most of the banks (36.4%) started using credit scoring models before the year 2002, whereas 18-2% started using credit scoring models for credit risk assessment between 2002 and 2005 and 6.1% started using credit scoring models between 2006 and 2008. The remaining 39.4% do not use credit scoring models for credit risk assessment.

4.3.4 Reasons for using credit scoring models

Here, the respondents were required to indicate the reasons as to why their banks started using credit scoring models used for credit risk assessment and results are as shown in table 4.3.4 below.

<table>
<thead>
<tr>
<th>Reason</th>
<th>% of respondents who use credit scoring models for the reason given.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to apply</td>
<td>27.3</td>
</tr>
<tr>
<td>Its effective</td>
<td>48.5</td>
</tr>
<tr>
<td>Its beneficial to both customers and the bank</td>
<td>66.7</td>
</tr>
<tr>
<td>Its applied by our competitors</td>
<td>18.2</td>
</tr>
<tr>
<td>It’s the bank’s policy</td>
<td>57.6</td>
</tr>
</tbody>
</table>

Here the respondents were required to state the reasons why their banks use credit scoring models for credit risk assessment. From the results shown in the table above, 27.3% of the respondents use credit scoring models because they are easy to work with, 48.5% because the models are effective, 66.7% because they are beneficial to both the customers and the bank, 18.2% because its applied by the competitors while 57.6% use credit scoring models because it’s the bank policy to use credit scoring model for credit risk assessment. The deduction here is that, most banks which use credit scoring models use them because the models are beneficial to both the loan applicants and the bank.

4.4 Non performing loans

This part of the study sought to establish the levels of non performing loans within the banks surveyed and further understand the reasons attributed to the those levels. The results of the findings are shown below.
4.4.1 Levels of NPLS

Here the respondents were required to state the levels of their respective banks as high, moderate or low. The results are as shown in figure 4.4.1 below.

**Figure 4.4.1 Levels of NPLS**

![Bar chart showing levels of NPLs](image)

Banks assets are mainly loans and advances to customers. When loans become non performing, they hurt the banks liquidity and impact on its earnings. Asset quality ratio measures how much total loans is non performing and it tells whether or not the bank has been lending wisely. From figure above, most of the banks surveyed (42.4%) reported moderate levels of NPLs, 36.4% reported high levels of NPLs while 21.2% reported low levels of NPLs.

4.4.2 Reasons attributed to levels of NPLs

Here the respondents were required to state the reasons attributable to their banks non performing levels and the results are shown in figure 4.4.2 below.

**Figure 4.4.2 Reasons attributed to levels of NPLs**

![Bar chart showing reasons for NPLs](image)
From figure above, loan collection methods used and ever changing economic conditions in the country were rated as the factors contributing greatly to the said levels of default rates. Customer’s unwillingness to repay was rated third followed by use of credit scoring models in credit risk assessment. From this we can deduce that, indeed, use of credit scoring models helps to make credit worthiness determination more effective.

4.4.3 Rating banks in terms of credit risk assessment

Here the respondents were required to indicate how they generally rate their banks in relation to credit risk assessment. The results are as shown in figure 4.4.3 below.

Figure 4.4.3 Rating banks in terms of credit risk assessment

![Bar chart showing rating in terms of credit risk assessment](image)

From figure above, most of the respondents (60%) rated their banks as being highly efficient in credit risk assessment, 28% were rated as frequently efficient while 12% was seldom efficient.

4.4.4 Relationship between NPLs and credit scoring

This part of the study analyses the relationship between non performing loans and the use of credit scoring models. Asset quality for the various banks was taken and an average of five years computed. This was then correlated with the results on use of credit scoring models. The results are as shown in table 4.4.4 below.
Table 4.4.4 Relationship between NPLs and credit scoring

<table>
<thead>
<tr>
<th></th>
<th>Asset quality</th>
<th>Credit scoring models</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset quality</td>
<td>Pearson Correlation</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>N</td>
<td>33</td>
<td>33</td>
</tr>
<tr>
<td>Credit scoring models</td>
<td>Pearson Correlation</td>
<td>-0.773</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>0.5</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>33</td>
<td>33</td>
</tr>
</tbody>
</table>

In this part correlation analysis has been conducted to establish the relationship between non performing loans and credit scoring models. Asset quality ratio of the respective banks has been used as the indicator of non performing loans. From the table above, there is a significant relationship between asset quality and use of credit scoring models. The correlation is at -0.773 and implying a negative relationship between use of credit scoring models and size of asset quality ratio. Further analysis, on the same variables indicated that, banks which have low asset quality ratio indicate low levels of NPLs thus a low asset quality ratio is desirable.
CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.0 INTRODUCTION

The purpose of this study was to examine the degree to which credit scoring practices are used within commercial banks in Kenya for credit risk assessment for loan applicants. This was with the view of determining which factors influence the use of credit scoring as a tool for credit assessment and further determine the relationship between NPLs and credit scoring practices. After data analysis, the conclusions of the study are outlined below.

5.1 CONCLUSIONS

The first research question sought to identify the credit scoring methods used by commercial banks in Kenya for credit risk assessment. After analyzing the collected data, risk adjusted return on capital model was the one mostly used by banks at 60.6%, linear probabilistic models at 27.3%, option pricing models at 30.3% and linear discriminate models at 21.2%. However, it emerged that, some of the banks use two or more models in credit risk assessment depending on the types of loans being appraised. None of the commercial banks surveyed reported using neural networks for credit risk assessment. The study also established that, some banks use internally developed models for credit risk assessment. However, they were not willing to disclose details about the models as part of their business strategies.

The second research question sought to determine the relationship between the use of credit scoring in credit risk assessment and the level of NPLs in commercial banks, where, asset quality ratio is used as the indicator for the levels of NPLs. The study established that, there is a significant relationship between asset quality and use of credit scoring models. The correlation is at - 0.773 and implying a strong negative relationship between use of credit scoring models and size of asset quality ratio. Further analysis, on the same variables indicated that, banks which have low asset quality ratio indicate low levels of NPLs thus a low asset quality ratio is desirable.
5.2 RECOMMENDATIONS

After undertaking the research, analyzing data collected and interpreting the findings, it was clear that, banks that use credit scoring models during credit risk assessment reported lower levels of NPLs thus this study recommends that, banks should embark on credit assessment systems which are able to give as much information about the borrower as possible. Credit scoring will help banks achieve effective credit risk assessment thus determine the borrower's credit worthiness easily.

5.3 SUGGESTION FOR FURTHER STUDY

This research was based on primary data collected through questionnaires and secondary data from financial statements from the various commercial banks. As the most of the data collected was of a self report nature, there is a possibility that it is prone to some degree of subjectivity. Consequently further research can be done on the same area of credit risk assessment through credit scoring but in this case multiple sources of data both in the form of quantitative and qualitative data can be used. This may be data from archival bank records to provide more information on credit scoring and which should be supplemented with primary data in order to have up-to-date facts and give a broader picture.
REFERENCES


Fair, Isaac and Company Inc. (1996). **Low to moderate income and high minority area case studies**


Gill and Reed. (1989). **Commercial Banking.** Prentice Hall


Market Intelligence Banking Survey (2001). *A comprehensive Analysis and ranking of 46 Kenyan Commercial banks*

Market Intelligence Banking Survey (2003). *A comprehensive Analysis and ranking of 46 Kenyan Commercial banks*

Market Intelligence Banking Survey (2004). *A comprehensive Analysis and ranking of 46 Kenyan Commercial banks*

Market Intelligence Banking Survey (2005). *A comprehensive Analysis and ranking of 46 Kenyan Commercial banks*


APPENDIX 1

STUDY QUESTIONNAIRE FOR ALL COMMERCIAL BANKS IN KENYA.

This questionnaire will help in gathering information about credit scoring practices and non-performing loans in the Kenyan commercial banks. All the information gathered will be treated with highest confidentiality and will be appreciated.

Please tick (✓) where appropriate

BACKGROUND INFORMATION.

1. POSITION IN BANK: __________________________
   NAME OF BANK __________________________

2. YEAR OF ESTABLISHMENT: __________________________

PART A: CREDIT POLICY.

3. How regularly does your bank review its credit policy? Please where appropriate.
   Quarterly ( )
   Semi-annually ( )
   Annually ( )
   Others, specify __________________________

4. Through what ways does the bank make employees aware of credit risk? Tick where applicable.

   Regular Meetings ( ) ( ) ( ) ( )
   Regular Training ( ) ( ) ( ) ( )
   Through Supervision on one to one basis ( ) ( ) ( ) ( )
   Credit Manuals. ( ) ( ) ( ) ( )
   Other, specify __________________________

5. On a scale of 1-4 how can you rate your bank in terms of the following

   1=Strongly Agree 2=Agree 3=Disagree 4=Strongly Disagree

   (i) Policies are conceptually clear and simple ( ) ( ) ( ) ( )
   (ii) Policies are clearly specified on who does what and how. ( ) ( ) ( ) ( )
   (iii) There is effective and recognized leadership in credit policy making in the bank ( ) ( ) ( ) ( )
   (iv) Policies operational goals are clear, flexible and
Easily understood

(v) The impact of credit risk policies is evaluated
At specified intervals

PART B: CREDIT SCORING AND CREDIT RISK ASSESSMENT

6. (a) Does your bank use any credit scoring model in credit risk assessment? Tick where appropriate YES () NO ()

(b) If yes in 6(a) above please indicate which models you use.
   Linear probability models ()
   Linear discriminate models ()
   Risk adjusted return on capital model ()
   Option – pricing models ()
   Neural Networks ()
   Any other, specify ________________________________

(c) When did the bank start using this (these) credit scoring models?
   Year: 2000 ()
      2001 ()
      2002 ()
      2003 ()
      2004 ()
      2005 ()
      2006 ()
   Other specify ________________________________

(d) Why does the bank use the credit scoring model(s) indicated above?
   Easy to apply ()
   It is effective ()
Beneficial to both customers and the bank ( )

Its applied by our competitors ( )

Bank policy ( )

Other, specify ____________________________

(e) If no in 6a above, please indicate any other method(s) that you use in credit risk assessment? ____________________________________________________________

7. If any credit scoring model is used please indicate which type of loans it’s used to assess.

Personal loans ( )

Business loans ( )

Corporate loans ( )

Credit Cards ( )

Any other specify ____________________________________________________________

8. a) which characteristics among the following does your bank consider in credit scoring models before availing credit incase of personal loans? Tick where applicable.

1. Age ( )

2. Years in employment ( )

3. Income Per annum ( )

4. Debit ratio ( )

5. Other sources of income ( )

6. Permanent address ( )

36
7. Residential address ( )
8. Marital Status ( )
9. Existing credit facilities ( )
10. Repayment History ( )
11. Purpose of the Loan ( )
12. Previously applied for the same ( )
13. Repayment period ( )
14. Collateral/security ( )

Other(s), specify

8.b) Which characteristics among the following does your bank consider in credit scoring models in case of business and corporate loans?

Character of borrower

<table>
<thead>
<tr>
<th>Character</th>
<th>Least considered</th>
<th>Mostly considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer willingness to repay</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Past repayment experience</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>High credit discipline</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Past performance in repayment</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>

Other(s), specify

Capacity

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Least considered</th>
<th>Mostly considered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash in bank</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Projected cash earnings</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Business skills</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>

Other(s), specify
### Conditions

<table>
<thead>
<tr>
<th>Conditions</th>
<th>( )</th>
<th>( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor economic conditions</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Interest rates prevailing in the economy</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Inflation levels in the economy</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Other(s), specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Collateral/Security

<table>
<thead>
<tr>
<th>Collateral/Security</th>
<th>( )</th>
<th>( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset types</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Capital invested</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Size of security</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Cash in bank</td>
<td>( )</td>
<td>( )</td>
</tr>
<tr>
<td>Other(s), specify</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9. Who formulates your credit scoring models?

<table>
<thead>
<tr>
<th>Role</th>
<th>( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive management</td>
<td>( )</td>
</tr>
<tr>
<td>Board of directors</td>
<td>( )</td>
</tr>
<tr>
<td>Credit managers</td>
<td>( )</td>
</tr>
<tr>
<td>Credit analysis</td>
<td>( )</td>
</tr>
<tr>
<td>Credit committee</td>
<td>( )</td>
</tr>
<tr>
<td>Other(s), Specify</td>
<td></td>
</tr>
</tbody>
</table>

10. How do you rate the level of NPLS in your bank?

<table>
<thead>
<tr>
<th>Rating</th>
<th>( )</th>
<th>( )</th>
<th>( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>( )</td>
<td>Moderate</td>
<td>( )</td>
</tr>
<tr>
<td>Low</td>
<td>( )</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11. What do you think has contributed to this performance with regard to NPLS?

<table>
<thead>
<tr>
<th>Contribution</th>
<th>( )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of credit scoring models</td>
<td>( )</td>
</tr>
</tbody>
</table>
12. Kindly indicate your bank’s default rate at any given time?

0%-10% of the loan portfolio ( )
11%-20% of the loan portfolio ( )
21%-30% of the loan portfolio ( )
31%-40% of the loan portfolio ( )
Other, Specify ________________________________

13. How do you rate your bank in terms of the following?

<table>
<thead>
<tr>
<th>(i) Credit Risk Management</th>
<th>Highly Efficient</th>
<th>Frequently Efficient</th>
<th>Seldom Efficient</th>
<th>Never Efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(ii) Credit risk assessment</th>
<th>Highly Efficient</th>
<th>Frequently Efficient</th>
<th>Seldom Efficient</th>
<th>Never Efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(iii) Managing problem loans</th>
<th>Highly Efficient</th>
<th>Frequently Efficient</th>
<th>Seldom Efficient</th>
<th>Never Efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(iv) Making relevant Credit risk Management policies</th>
<th>Highly Efficient</th>
<th>Frequently Efficient</th>
<th>Seldom Efficient</th>
<th>Never Efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
<td>( )</td>
</tr>
</tbody>
</table>
WORK PLAN

ACTIVITIES

Proposal writing
Proposal correction
Defense of proposal
Pilot study
Data collection
Data analysis
Compiling the report
Submission of report

TIME

Five weeks
One week
One day
One week
Three weeks
Four weeks
Three weeks
One day

SCHEDULE OF ACTIVITIES

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>WEEK</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Pilot study</td>
<td></td>
</tr>
<tr>
<td>Data collection</td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td></td>
</tr>
<tr>
<td>Report compiling</td>
<td></td>
</tr>
<tr>
<td>Report submission</td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX 3

**BUDGET**

<table>
<thead>
<tr>
<th></th>
<th>COST (ksh.)</th>
<th>TOTAL (ksh.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROPOSAL WRITING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typing 45 pages @ sh.30</td>
<td>1350</td>
<td></td>
</tr>
<tr>
<td>Photocopy @ sh.2.00</td>
<td>630</td>
<td></td>
</tr>
<tr>
<td>Spiral binding @ sh.40</td>
<td>280</td>
<td></td>
</tr>
<tr>
<td>Transport and miscellaneous</td>
<td>5000</td>
<td>7260</td>
</tr>
<tr>
<td><strong>PILOT STUDY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 copies of questionnaires @ sh.12</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Transport and miscellaneous</td>
<td>3000</td>
<td>3240</td>
</tr>
<tr>
<td><strong>DATA COLLECTION</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 copies of questionnaires @ sh.12</td>
<td>360</td>
<td>5360</td>
</tr>
<tr>
<td>Transport and miscellaneous</td>
<td>5000</td>
<td></td>
</tr>
<tr>
<td><strong>DATA ANALYSIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data analysis services</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>Transport and miscellaneous</td>
<td>4000</td>
<td>7000</td>
</tr>
<tr>
<td><strong>PROJECT WRITING</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typing 80 pages @ sh.30</td>
<td>2400</td>
<td></td>
</tr>
<tr>
<td>Photocopy @ sh.2.00</td>
<td>960</td>
<td></td>
</tr>
<tr>
<td>Binding @ sh.100</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Transport and miscellaneous</td>
<td>4000</td>
<td>7360</td>
</tr>
</tbody>
</table>

**TOTAL: 30,220**
APPENDIX 4

LIST OF BANKS

1. African Banking Corporation
2. Bank of Baroda
3. Bank of India
4. Barclays Bank of Kenya
5. CFC Bank
6. Chase Bank Ltd
7. Citibank Ltd
8. City Finance Bank
9. Co-operative Bank of Kenya
10. Commercial Bank of Africa
11. Consolidated Bank of Kenya Ltd
12. Credit Agricole Indosuez
13. Credit Bank Ltd
14. Delphis Bank
15. Development Bank of Kenya
16. Diamond Trust Bank
17. Dubai Bank Kenya Ltd
18. EABS Bank Ltd
19. Equatorial Commercial Bank Ltd
20. Equity Bank
21. Family Bank Ltd
22. Fidelity Commercial Bank Ltd
23. Fina Bank Ltd
24. First American Bank of Kenya
25. Giro Commercial Bank Ltd
26. Guardian Bank
27. Habib Bank A.G. Zurich
28. Habib Bank Ltd
29. Housing Finance Co. Ltd
30. Imperial Bank, Nairobi
31. Industrial Development Bank
32. Investment & Mortgages Bank Ltd
33. K-Rep Bank Ltd
34. Kenya Commercial Bank Ltd
35. Middle East Bank
36. National Bank of Kenya
37. National Industrial Credit Bank Ltd
38. Oriental Commercial Bank Ltd
39. Paramount Universal Bank Ltd
40. Prime Bank Ltd
41. Prime Capital and Credit Ltd
42. Southern Credit Banking Corp. Ltd
43. Stanbic Bank Kenya Ltd
44. Standard Chartered Bank
45. Trans-National Bank Ltd
46. Victoria Commercial Bank Ltd
47. Prudential Bank
48. Trust Bank
APPENDIX 5

INTRODUCTION LETTER

KIOKO PETER MWANZIA

KENYATTA UNIVERSITY,

SCHOOL OF BUSINESS,

P.O BOX 43844,

NAIROBI.

Dear sir/madam,

RE: PERMISSION TO CONDUCT RESEARCH

I am an MBA student at Kenyatta University, undertaking a research project as a partial fulfillment of the MBA degree. I am researching on Credit risk assessment through Credit Scoring models among commercial banks in Kenya.

I am therefore seeking your assistance in providing the necessary information in the above areas. Any information collected will be treated strictly and solely for academic purposes.

Your cooperation will be highly appreciated.

Yours faithfully,

Kioko P.M
## APPENDIX 6

List of banks and credit scoring models used

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of bank</th>
<th>Credit model used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Barclays</td>
<td>Risk adjusted return on capital, Linear probabilistic, Option pricing</td>
</tr>
<tr>
<td>2</td>
<td>Kenya commercial bank</td>
<td>Risk adjusted return on capital, Option pricing, Linear discriminate, Linear probabilistic</td>
</tr>
<tr>
<td>3</td>
<td>Diamond trust</td>
<td>Risk adjusted return on capital, Linear discriminate, Linear probabilistic</td>
</tr>
<tr>
<td>4</td>
<td>Commercial bank of Africa</td>
<td>Risk adjusted return on capital, Option pricing, Linear probabilistic</td>
</tr>
<tr>
<td>5</td>
<td>National bank of Kenya</td>
<td>Risk adjusted return on capital, Option pricing, Linear probabilistic</td>
</tr>
<tr>
<td>6</td>
<td>Fidelity</td>
<td>Risk adjusted return on capital, Option pricing, Linear probabilistic</td>
</tr>
<tr>
<td>7</td>
<td>Standard Chartered</td>
<td>Risk adjusted return on capital, Linear probabilistic</td>
</tr>
<tr>
<td>8</td>
<td>Krep</td>
<td>Risk adjusted return on capital, Linear discriminate</td>
</tr>
<tr>
<td>9</td>
<td>Bank of India</td>
<td>Risk adjusted return on capital, Linear discriminate</td>
</tr>
<tr>
<td>10</td>
<td>Dubai</td>
<td>Risk adjusted return on capital, Linear probabilistic</td>
</tr>
<tr>
<td>11</td>
<td>Fina</td>
<td>Risk adjusted return on capital, Linear probabilistic</td>
</tr>
<tr>
<td>12</td>
<td>Paramount</td>
<td>Risk adjusted return on capital, Option pricing</td>
</tr>
<tr>
<td>13</td>
<td>Co-operative</td>
<td>Risk adjusted return on capital, Linear probabilistic</td>
</tr>
<tr>
<td>14</td>
<td>Oriental commercial</td>
<td>Risk adjusted return on capital, Option pricing</td>
</tr>
<tr>
<td>15</td>
<td>City finance</td>
<td>Risk adjusted return on capital, Option pricing</td>
</tr>
<tr>
<td>16</td>
<td>Victoria Commercial</td>
<td>Risk adjusted return on capital, Option pricing</td>
</tr>
<tr>
<td>17</td>
<td>Investments and mortgages</td>
<td>Risk adjusted return on capital, Linear discriminate</td>
</tr>
<tr>
<td>18</td>
<td>Consolidated</td>
<td>Risk adjusted return on capital</td>
</tr>
<tr>
<td>19</td>
<td>Imperial</td>
<td>Risk adjusted return on capital</td>
</tr>
<tr>
<td>20</td>
<td>Family</td>
<td>Risk adjusted return on capital</td>
</tr>
<tr>
<td>21</td>
<td>Transnational</td>
<td>None</td>
</tr>
<tr>
<td>22</td>
<td>Prudential</td>
<td>None</td>
</tr>
<tr>
<td>23</td>
<td>Delphis</td>
<td>None</td>
</tr>
<tr>
<td>24</td>
<td>Fidelity commercial</td>
<td>None</td>
</tr>
<tr>
<td>25</td>
<td>Consolidated</td>
<td>None</td>
</tr>
<tr>
<td>26</td>
<td>Credit bank</td>
<td>None</td>
</tr>
<tr>
<td>27</td>
<td>Prime bank</td>
<td>None</td>
</tr>
<tr>
<td>28</td>
<td>Equatorial commercial</td>
<td>None</td>
</tr>
<tr>
<td>29</td>
<td>National industrial credit</td>
<td>None</td>
</tr>
<tr>
<td>30</td>
<td>Credit agricole</td>
<td>None</td>
</tr>
<tr>
<td>31</td>
<td>Prime capital and credit</td>
<td>None</td>
</tr>
<tr>
<td>32</td>
<td>First American bank</td>
<td>None</td>
</tr>
<tr>
<td>33</td>
<td>Equity</td>
<td>None</td>
</tr>
</tbody>
</table>

45