

DETERMINANTS OF MORTGAGE DELINQUENCY

A PERCEPTION SURVEY OF COMMERCIAL BANK MORTGAGORS

BY

ESTHER N. WAMALWA

MASTER OF COMMERCE (FINANCE AND ECONOMICS)

KCA UNIVERSITY

2016

DETERMINANTS OF MORTGAGE DELINQUENCY

A PERCEPTION SURVEY OF COMMERCIAL BANK MORTGAGORS

BY

ESTHER N.WAMALWA

**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE AWARD OF MASTERS IN SCIENCE COMMERCE
DEGREE (FINANCE AND ECONOMICS) IN THE SCHOOL OF BUSINESS AND
PUBLIC MANAGEMENT AT KCA UNIVERSITY**

JANUARY, 2016

DECLARATION

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

Student Name: Esther Nasibwondi Wamalwa

Reg No: KCA/11/00014

Sign.....

Date.....

I do hereby confirm that I have examined the master's dissertation of

Esther Nasibwondi Wamalwa

And have confirmed that all revisions that the dissertation panel and examiners recommended have been adequately addressed.

Sign.....

Date.....

Mr. Dominic Ojwang
Dissertation Supervisor

DETERMINANTS OF MORTGAGE DELINQUENCY: A SURVEY OF COMMERCIAL BANK MORTGAGEES IN KENYA

ABSTRACT

This study focused on a survey of the determinants of mortgage delinquency amongst commercial banks mortgagees in Kenya. Undoubtedly, financial systems and economic growth are strongly interlinked. It is therefore important to study and identify the causes of mortgage delinquency which ultimately has an effect on economic growth. The purpose of this study was to determine the determinants of mortgage delinquency amongst commercial banks mortgagees in Kenya. The study sought to determine the relationship between mortgage individual characteristics and delinquency amongst commercial banks mortgagees in Kenya, to evaluate the relationship between mortgage specific characteristics on mortgage delinquency amongst commercial banks mortgagees in Kenya and to explore the role of mortgage characteristics on mortgage delinquency amongst bank mortgages in Kenya. The research adopted descriptive research design. The target population was 38 registered commercial banks in Kenya offering mortgages. The respondents were 2 senior financial officers in the mortgage department of each of the 38 banks. Due to the population size, a census approach was used. Primary data was obtained through self-administered questionnaires. The data was analysed using exploratory and confirmatory factor analysis. Quantitative analysis involved the use of pie charts, bar graphs, means and percentages to present the information. The processed data was presented in tables, graphs and explanation given in prose to explain determinants of delinquency amongst commercial banks mortgagees in Kenya. The study deployed inferential statistics that involved the use of ANOVAs and regression analysis to study the effect of independent variable on the dependent variables. The findings were presented using tables and figures. The study found that mortgage characteristics had the highest significant effect in mortgage delinquency followed by mortgage specific characteristic while mortgage individual characteristics had no effect on mortgage delinquency. Mortgage characteristic had a beta value ($\beta_1 = 2.005$). This meant that on an integrated scale, a unit change in Mortgage characteristic resulted in a 2.005 positive change in mortgage delinquency. A unit change in mortgage specific characteristic ($\beta_2 = 1.359$) would result in a 1.359 positive change in mortgage delinquency and finally a unit change in mortgage individual characteristic ($\beta_3 = -1.183$) resulted in a negative change in mortgage delinquency. A conclusion can therefore be drawn from the study that mortgage characteristics and mortgage specific characteristics affect mortgage delinquency. The banks should involve the board's credit committee in selecting and vetting the mortgage applicants. The bank's credit committee should deploy bank rehabilitation process by calling clients to pay overdue mortgages. Interest rates charged on various types of mortgages should be able to cover the cost of the mortgage and meet good profit margin. The bank's lending policy should be periodically reviewed to reflect the prevailing economic conditions. The lending authority and mortgage approval should be decentralized. Information from credit reference bureaus should be used in appraising the customer's mortgages.

Keywords: Mortgage, Mortgagor, Mortgagee, Delinquency, Determinants, Characteristics

ACKNOWLEDGEMENT

First and foremost is my gratitude to God for the gift of life and having given me the grace to go through the course despite the challenges. I will be forever grateful.

This work could not have been a reality without the guidance, self-sacrifice and scholarly assistance by my supervisors Dr. Renson Muchiri and Mr. Ojwang. I will forever be grateful for their genuine support.

Lastly am grateful to my course mates and family for cheering me on and ensuring that I don't give up on the way.

May our dear Lord richly bless you!

TABLE OF CONTENTS

ABSTRACT	iii
ACKNOWLEDGEMENT	IV
DEDICATION	V
LIST OF FIGURES AND TABLES	VI
ACRONYMS AND ABBREVIATIONS	VII
DEFINITION OF KEY TERMS	VIII
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the study	1
1.2 Mortgage Sector in Kenya	4
1.3 Statement of the Problem.....	7
1.4 Objectives of the Study	8
1.5 Research Questions	9
1.6 Significance of the Study	9
1.7 Scope of the Study	10
CHAPTER TWO: LITERATURE REVIEW	11
2.1 Introduction.....	11
2.2 Theoretical Literature/ Theoretical review of the study	11
2.3 Empirical Review.....	14
2.4 Mortgage Operators in Kenya.....	19
2.5 Literature Review Summary	22
2.6 Conceptual framework.....	23
CHAPTER THREE: RESEARCH METHODOLOGY	26
3.1 Introduction.....	26
3.2 Research design	26
3.3 Target Population.....	26
3.4 Data collection Instruments and Procedures.....	27
3.5 Testing for Validity and Reliability	28
3.6 Data Analysis	29
CHAPTER FOUR: DATA ANALYSIS AND PRESENTATIONS	32
4.1 Introduction.....	32
4.2 General Information.....	34
4.3 Factors Influencing Mortgage Delinquency	38
4.4 Test of Research Hypotheses Using Regression Analysis.....	40
4.5 Path Diagram	49
CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS	50
5.1 Introduction.....	50
5.2 Summary of findings.....	50
5.3 Conclusions.....	52
5.4 Recommendations.....	53
5.5 Suggestions for further Research	54
REFERENCES	55
APPENDICES	59

DEDICATION

I dedicate the project work to my entire family for the support especially for the encouragement and cheering me up throughout the period.

LIST OF FIGURES AND TABLES

Figure 1: Conceptual Framework	24
Figure 2: Age of Repondents	34
Figure 3: Work Experience	35
Figure 4: Academic qualification.....	36
Table 1: Reliability Statistics.....	33
Table 2: Demographic profile of respondents	37
Table 3: Kaiser Normalisation Rotation.....	39
Table 4: ANOVA of mortgage individual characteristic.....	42
Table 5: Model summary of mortgage individual characteristic.....	42
Table 6: Coefficiets of mortgage individual characteristic.....	43
Table 7: ANOVA of mortgage specific characteristic.....	43
Table 8: Model summary of mortgage specific characteristic.....	44
Table 9: Coefficients of mortgage specific characteristics.....	44
Table 10: ANOVA of mortgage characteristic	45
Table 11: Model summary of mortgage delinquency.....	45
Table 12: Coefficients of mortgage delinquency.....	46
Table 13: Model summary of mortgage delinquency.....	47
Table 14: Regression coefficients.....	47
Table 15: ANOVA Results between Mortgage delinquency and predictor variables	48

ACRONYMS AND ABBREVIATIONS

DRC	– Democratic Republic of Congo
USD	– United States Dollars
FRM	– Fixed Rate Mortgages
ARM	– Adjustable Rate Mortgages
NHC	– National Housing Corporation
HFI	– Housing Finance Institution
GDP	– Gross Domestic Product
LTV	– Loan-To-Value
HIV	- Human Immuno Deficiency Virus.
ADB	- African Development Bank
KSHS	- Kenya Shillings
EDR	- External Dispute Resolutions.
UK	- United Kingdom
DTI	- Debt to Income ratio
NPL	- Non- Performing Loans
CBK	- Central Bank of Kenya
NPA	- Non-performing Assets

DEFINITION OF KEY TERMS

- Delinquency** – A state where the borrower fails to meet or repay an obligation on the initially agreed periodical time (Brent, Kelly, Lindsey-Taliefero, & Price, 2011)
- Mortgage** – It is money borrowed by lender purchase a home or property for residential or for commercial purposes (Brent, Kelly, Lindsey-Taliefero, & Price, 2011)
- Mortgagee** – is the provider of mortgage. Usually an institution which lends money to borrowers interested in purchasing of property like a home (Brent, Kelly, Lindsey-Taliefero, & Price, 2011).
- Mortgagor** – is the recipient of the mortgage that is used to purchase property like a home (Brent, Kelly, Lindsey-Taliefero, & Price, 2011).
- Foreclosure** – It is a specific legal process in which a lender attempts to recover the balance of a loan from a borrower who to some circumstances' has stopped making periodically agreed payments to the lender by forcing the sale of the asset used as the collateral for the loan(Lawrence & Smith, 1992).
- Mortgage default**– This is when the mortgagor fails to make payments as earlier agreed with the lender for over 90 days giving the lender authority to take over the property. (Brueggeman & Fisher, 2011).
- Current debt servicing ratio** – this is a ratio gotten by dividing monthly repayment obligations against the current monthly income multiplied by 100 percent; it shows the repayment capability of the borrower(Loh & Tan, 2002).
- Subprime mortgage** – They are risky loans because they are advanced to customers whom the lending institution have either little background information or their credit score is not meeting the agreed threshold, suggesting high probabilities of default(Danis & Pennington-Cross, 2005).
- Mortgage Delinquency**– refers to temporary lapse of periodical payments by the borrower but with intention resuming normal periodical payment in the future (Loh & Tan, 2002).

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

There is no doubt world over that there is a link between financial systems and economic growth. The economic growth of a country will falter if the two concepts are not aligned hence destabilizing the economy. The explanation of the relationship is found on the fact that financial systems help reduce the costs of moving funds between borrowers and lenders; and help overcome information asymmetry between borrowers and lenders(Claus, Jacobsen, & Jera, 2004; Serres, Kobayakawa, Sløk & Vartia, 2006).

Rousseau and Sylla (2001) are in agreement that a healthy financial system consists of five key components, sound public finances and public debt management; stable monetary arrangements; a variety of banks, some with domestic and others with international orientations; a central bank to stabilize domestic finances and manage international financial relations; and well-functioning securities markets. Such an articulated financial system, once it is in place and functioning, can mobilize capital domestically and thereby promote a country's economic development and growth, and even attract foreign based investors.

Banks take a centre stage in mortgage transactions because of their key role in financial movements in the economy. Mortgage financing process begins when the borrower decides to seek banks funds for a planned purchase of a property. The property would then serve as a security for the acquired loan (Brueggeman & Fisher, 2011) A mortgage is a bank loan taken by individuals with intention of acquiring a home or commercial property (Brent, Kelly, Lindsey-Taliefero, & Price, 2011). Due to some income challenges, most mortgage payments become delinquent which can result to default and later on foreclosed.

This study therefore looks at the impact of mortgage delinquency to borrowers and their ratings based on mortgage - equity ratio which if negative poses a risk and increase probability of default on mortgage loans. Delinquency position of borrowers' mortgages influences borrowers' forcing some to default (Jackson & Kasserian, 1980), an area of great interest by policymakers. Massive delinquency and eventually defaults could be an indicator of non-performing economic policies. The other major side effects of delinquency and probable default are on borrowers' consumer's credit score. A foreclosure is one of the stronger predictors of borrowers' credit risk (Lawrence & Smith, 1992).

Mortgage delinquency and eventual default has well-documented economic losses that befalls the borrowers. Most mortgagors refrain from loan default whenever their income flows are not disrupted and are able to meet the periodic payments. The ability-to-pay theory of default states that, "current debt servicing ratio (CDSR), defined as the monthly repayment obligations as a percentage of current monthly income, which captures the repayment capability of the borrower, plays a critical role in accounting for defaults", (Loh & Tan, 2002).

Causes of mortgage delinquency vary according to the borrower with several factors contributing to delinquency position at play. Some are economic with a bigger role played by the mortgage lenders while others are caused when financial lenders adjust lending terms abruptly forcing borrowers to respond to the threat in different ways including refinancing. Inflation is another factor that contributes to increased mortgage transaction costs hence delinquency. Property related variables like property area, current unit price and age of property might create disillusion with mortgagors hence high possibility of delinquency (Foote, Gerardi, & Willen, 2008).

Change in social status also act as trigger event to mortgage delinquency. When the source of income is disrupted with events such as divorce, job loss, sudden death; seasons variables like drought, famine and general scarcity of basic commodities and political instability. Berry, Dalton and Nelson (2010) summarizes the trigger events of delinquency as borrowers initially experiencing repayment difficulties which may arise due to loss of work and income, closely followed by unbearable debt iced with too high interest rates. Illness or accident in the household, relationship breakdown and underestimated costs of repayments and other housing costs are also significant.

In extreme cases, as reported by some studies, borrowers have experienced health related problems associated with the unsustainable housing and the mortgage arrears pressure(Luis, 2004).This condition, of course, is a haven to insurance industry which is devoted to providing safety nets to mortgage defaulters. The objective of such insurance companies is to offer a soft landing spot to borrowers who might experience devastating effects of turmoil that affect their income. Mortgage insurance also helps to qualify certain bracket of borrowers who may not fully meet the threshold of a bank mortgage. A good example in Kenya is Housing Finance of Kenya mortgage insurance which protects the homeowner against severe illness such as life-threatening cancers, HIV, heart attack, stroke and kidney failure (Maveke, 2014).

When household borrowings' are constrained, it can easily trigger delinquency. This happens normally when there is an increasingly high loan-to-income ratio. Comparing mortgage types, adjustable-rate mortgage defaults are common when nominal interest rates increase and at the same time feel idiosyncratic shocks to labour income. On the other hand, low interest rates and inflation trigger fixed-rate mortgages defaults (Brueggeman & Fisher, 2011).

Fixed rate and adjustable rate mortgages are the two main types of amortized home or commercial property mortgages. Fixed rate mortgages (FRM) interest rates stay the same over the entire term usually 15, 20 or 30 years. Adjustable rate mortgage (ARM) offers a lower initial rate of interest to a mortgage than fixed rate loans but after an initial period, rates fluctuate over the life of the loan. The third mortgage option on the market is balloon loan which offers fixed payments for a period of time (usually 5 to 7 years), followed by one large payment of the remaining loan balance. This mortgage is popular with homebuyers who are certain they will move or refinance in 5 to 7 years. Other loan types include interest-only, renovation, new construction, and reverse mortgage among others (Stanton & Wallace, 1999).

Continent-wise, a developer's survey of Africa suggested that house prices range from USD 10,000 in Mali to over USD 100,000 in the Gambia, or even over USD 200,000 in Kinshasa, DRC. Beyond affordability, housing has always been a contentious issue on the continent. Closely linked to land rights, associated with basic needs of the population, its public good nature and universal reach has given grounds to government intervention under the form of social housing projects. This aspect of housing puts housing as a social welfare problem rather than an economic growth opportunity. It is therefore important to understand what the private sector can do, on its own, to satisfy housing needs in African countries and in particular to expand supply of housing to middle and low-income earners (Arvanitis, 2013).

1.2 Mortgage Sector in Kenya

Kenya's long-term development blueprint, Vision 2030, aims to transform the country into a newly industrialized, middle-income country that will be able to offer high quality of life to her citizens by 2030(The World Bank, 2011). The vision is guided by three pillars: an economic pillar which aims at economic growth of more than 10% per annum; a social pillar which seeks

just, cohesive and equitable social development in a clean and secured environment; and a political pillar which aims to install an issue-based, people-centred, result-oriented and accountable political system that respects rule of law and protects the rights and freedoms of every Kenyan. The pillars are anchored on infrastructure development, public sector reform and macroeconomic stability (ADB, 2014).

Kenya articulated her first housing policy in 1965/66 Sessional Paper No.5 with the long term goal of ensuring that every household had access to a decent home, which was considered as a positive gesture by many players in building industry. The major challenge however, is that Kenya is experiencing rapid growth of middle class which currently encompasses 44.9% of the population with an average earning capacity of USD 2 to USD 20 per day (Arvanitis, 2013). This phenomenon has been accompanied by rapid urbanization growth rate which stands at 5%.

To understand Kenyan housing market better, 5 dimensions must be put into consideration. These are demand and supply gap, access to finance, building technologies and related costs, real estate developer's capacity, and land both for property and reserved public infrastructure expansion(Arvanitis, 2013).In recent years, the government funds allocation to National Housing Corporate (NHC),an entity charged with providing subsidized housing has also not been consistent with inflation.

Saving and loan Kenya limited (S&L) in June 18th 2009 reported that a substantial percentage of its income (Kenya Shillings 422 million to June 2009) originated from demand for loans from individuals earning a net salary of between Kenya shillings 50,000 and 100,000 who were searching for homes. These statistics have clearly shown that a majority of Kenyan adult cannot sustain a family and pay a mortgage if they are to purchase a house on mortgage and this is the reason why default risk in this sector of finance has become a big problem (Kidundi,

2010). However, Kenya ranks fairly well in Africa in terms of loan access, venture capital availability and financing through the equity market. Unfortunately, some of these achievements are watered down when small businesses and individuals fail to secure mortgages due to lack of collaterals (ADB, 2014).

The quality of the mortgage portfolio of the housing finance institutions (HFIs) in Kenya is generally high and is the result of careful lending and underwriting procedures. Finscope survey ran in 2009 estimates that in Kenya one third of the houses were inherited and a paltry 1.5% of house owners acquired it through credit (Arvanitis, 2013). In Nairobi, about 70% of the house structures are permanent but this figure drops to only 54% in coastal regions. Rough estimates also put it that a new-built house in Kenya cost USD 22,350 in 2012, with prices being much higher in Nairobi and other large cities like Mombasa and Kisumu. This is near midrange when compared to other East and Southern African countries. However, in Kenya, put against average earnings this price can be considered as high, and can only be afforded by the top income earners. This is true especially when the prices are compared against GDP per capita or the USD 1.25 per day poverty measure.

Most lending however, goes to first time home buyers. The average loan amount is between KShs 4-6 million, with a mean maturity of 8-15 years. Mortgage loans attract variable interest, making them susceptible to rises in interest rates. Thus most of HFIs try to keep their rates lower than the annual inflation rates, that is, negative real interest rates, mainly because of the fear of increasing the rate of delinquencies and defaults (The World Bank, 2011).

The implications of the study to policy makers involve creating need for expanding data collection on repossessions of homes, requiring more detailed information from lenders and the courts. The government through Central Bank of Kenya would also take over responsibility and

expand the regulation of credit to all lenders and mortgage brokers in order to simplify and unify legislation and supervision. Mortgagors would then be given comprehensive access to external dispute resolution (EDR) to address complaints, easing current eligibility limits for foreclosure (Berry, Dalton, & Nelson, 2010).

1.3 Statement of the Problem

Policy makers in Kenya have promoted homeownership through a number of channels including mortgage financing just like the case in developed countries. According to Pittman (2008), obtaining a mortgage is not easy as such since it involves many procedures like identifying the best service provider with the best interest rates.

Between 2002 and 2012, Kenyan housing finance system experienced rapid growth in both value of loans and number of loans. With mortgage assets equivalent to 2.5% of Kenya's GDP, (CBK, 2013), Kenya mortgage market is ranked the third most developed in Sub-Saharan Africa. Only Namibia and South Africa rank higher, with Botswana just slightly smaller (Walley, 2011).

The mortgage market in Kenya has increased from 7,600 in 2006 to 20,000 homes in 2012 but hikes in interest rates has slowed down mortgage uptake. (CBK,2013).The prevailing high interest rates as a result of a stringent monetary policy being pursued by CBK as an effort to fight high inflation has dampened the mortgage market further. As the Central Bank raised its rates to 18 percent in 2012, mortgage loans also rose to 25 percent in the first half of 2012 from an average of 14 percent experienced the previous year. Interest rates on mortgages have been as high as 32%. (CBK, 2013). This has resulted to interest payable on loans to amount to the initial principal sum advanced within a few years. For long-term borrowing as in the cases of real estate development this is not sustainable nor does it encourage borrowing (Ngacha, 2013).

Since lenders may not know the intentions of borrowers, it is difficult for them to tell whether borrowers are only delaying mortgage payments temporarily or have stopped mortgage payments altogether. Therefore, further understanding of the factors that drive delinquency and the transition from delinquency to foreclosure is important.

Lambrecht, Perraudin, & Satchell (1997) confirms that in UK, “mortgage default is driven by a complex set of factors that affect a household’s ability and incentive to repay”. This finding went ahead to recommend a further research at the household level to determine the effects of savings, income changes, household structure and housing equity to mortgage uptake. Such models have the potential to assist lenders, insurers and policy makers identify vulnerable borrowers and in predicting the impact of socio-economic changes(Pryce & Keoghan, 2002; Lambrecht, Perraudin, & Satchell, 1997).Given the steady growth of the mortgage industry in the recent years in Kenya but with scanty information on mortgage delinquency, the study seeks to fill in the knowledge gap by investigating the determinants and effects of mortgage delinquency amongst commercial banks mortgagees in Kenya.

1.4 Objectives of the Study

The study aims at investigating determinants of mortgage delinquency in Kenya, guided by the following specific objectives.

- I. To determine the relationship between mortgage individual characteristics and mortgage delinquency amongst commercial banks mortgagees in Kenya.
- II. To evaluate the relationship between mortgage specific characteristics on mortgage delinquency amongst commercial banks mortgagees in Kenya.
- III. To explore the role of mortgage characteristics on mortgage delinquency amongst commercial banks mortgagees in Kenya.

1.5 Research Questions

The study will be guided by the following research questions:

- I What is the relationship between individual specific characteristics and mortgage delinquency amongst commercial banks mortgagees in Kenya?
- II Do mortgage characteristics affect mortgage delinquency amongst commercial banks mortgagees in Kenya?
- III How is mortgage characteristics related to mortgage delinquency amongst commercial banks mortgagees in Kenya?

1.6 Significance of the study

The research results will also be important to scholars and researchers as it will add to the existing pool of knowledge of determinants of mortgage delinquency. Many upcoming scholars would have reference point. The study will also provide a launch pad for extension of research on mortgage delinquency amongst commercial banks mortgagees in Kenya.

The study will provide an analysis of information that can be used by the commercial bank mortgagees to improve the assessments during underwriting and mortgage services to implement strategies that improve the default resolution process. This would also help the mortgagees to reach many Kenyans who yearn to own homes through mortgages.

The study is important to the Central Bank of Kenya, an entity tasked with formulating macroeconomic objectives such as interest rates stabilization as it will be able to reduce the number of mortgage delinquencies in the country. In addition they may be able to incorporate what other developed economies like United States and European Union countries are doing in controlling the mortgage market.

1.7 Scope of the Study

The major scope of the study is to carry out a survey of determinants of mortgage delinquency amongst commercial banks mortgagee's in Kenya. The study will cover home or individual mortgage uptake and exclude commercial mortgages. All the housing financial institution's data will be analysed to give a true picture of home mortgage delinquency in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter defines mortgage delinquency by analysing the loanable funds theory, options theory and mortgage pricing, and trigger events theory which explains the intrigues behind delinquencies and foreclosures. The chapter also looks at the empirical studies highlighting the determinants of mortgage delinquency. Lastly, a conceptual framework is derived from both the empirical and theoretical literature.

2.2 Theoretical Literature/ Theoretical review of the study

According to Brent, Kelly, Lindsey-Taliefero and Price (2011), a borrower is declared to be delinquent on mortgage when he or she misses one payment and a second payment is due. Once a borrower misses three or more payments, then it is considered as a default. Banks (lenders) may then proceed with foreclosure. Foreclosure in this context refers to a civil lawsuit in which a bank, or mortgagee seeks a court order to seize and sell property the collateral property to satisfy a debt. If the court awards judgment to the lender, the lender can have the property sold at auction to pay off the mortgage debt. As a result of the foreclosure, the funds borrower loses all the rights to the property (house).

There are several theories explaining the implications on credit risk management. Interest rates theories recognize that interest rates have an effect on credit risk because the higher the interest rate the higher the risk that the loan might not be repaid and thus the higher the credit risk.

2.2.1 The Loanable funds Theory

Loanable funds theory stipulates that the rate of interest is calculated with two factors in mind, the demand and supply of loan disposable funds present in the capital market (Wicksell, 1954). Surprisingly during economy growth period, household sector is considered to be the net supplier of loanable funds while the business sector is the net consumer. Household only take the role of consumer of loanable funds when funds for financing house acquisitions, purchase of automobiles and other household items are needed. Once the purchase is done, the result is instalment debt which increases with the level of income, creating an inverse relationship between the interest rate and the quantity of loanable funds demanded in the market.

The loanable funds theory of interest indicates that both savings and investments are key to determining the rates of interest in the long run. However, short term interest rates are derived from the financial conditions of a particular economy. The availability of loan amounts is essential in the determination of the interest rates in the case of Loanable Funds Theory of the Rate of Interest.

Keynes (1965) studied the demand –supply interaction of Loanable funds and found out that, the nominal rate of interest is determined by the interaction between the demand and the supply of the loanable funds. An increase in the demand of loanable funds leads to an increase in the interest rate while a decrease in the demand of loanable funds leads to a decrease in the interest rate keeping the same level of supply. The loanable funds theory recognizes the fact that money can play a disturbing role in the saving and investment processes and thereby causing variations in the level of income

2.2.2 Options Theory and Mortgage Pricing

Options models have five variables which are; asset price relative to exercise price, volatility, expiration period, the interest rate and the dividend yield of the customer (Capozza, Green, & Hendershott, 1996). The loan to value which is the asset price relative to the exercise price and the mortgage age which is the expiry date is significant in the analysis of default.

Economist theorists Foster and Order (1984) modelled the default aspect of a mortgage as a put option where the underlying asset is the secured property. They formally interpreted mortgage delinquency as exercising output option. Kau, Epperson, Keenen and Muller (1985) extended the model to the commercial mortgage framework. When the market value of the home exceeds the market value of the mortgage, the borrower has a financial incentive to sell the property to extract the equity rather than the default. The option based theory provides a framework for understanding the relationship between equity and loan performance. Mortgage delinquency is viewed as a put option in which the borrower has the right to transfer ownership of the home to the lender to retire the outstanding balance of the loan.

2.2.3 Trigger Events Theory

Proponents of this theory argue that unexpected events such as unemployment and divorce shock the borrower's ability to repay back their mortgage. Foster and Order (1984) found out that unemployment and divorce are the two factors that have significant effects in their model. Vandell and Thibodeau (1985) found out that the default risks of self-employed borrowers are higher in probability due to their income volatility.

According to Webb (1982) households headed by minorities or with persons whose occupations have high income variability are more likely to be delinquent. Shocks to a person's

income and expenses affect the borrowers' decision to delay mortgage payments (Kelly, Brent, Lindsey-Taliefero, & Price, 2011).

2.3 Empirical Review

This segment focuses on the most relevant papers in order to highlight the contributions of the current study. The question of whether or not a borrower is delinquent is a topic of active research since when scheduled payments are not made; lenders cannot know when borrowers are only delaying mortgage payments temporarily or stopping mortgage payments altogether (Brent et al 2011).

2.3.1 Mortgagor Characteristics and Delinquency

Various researches propose that volatility in household's income is the variable that causes mortgage delinquency (Luis, 2004). More so, households headed by minors or with persons in occupations that have high income variability are more likely to be delinquent (Webb 1982). In addition to this, other factors such as different types of employment, unemployment and shift in income level of mortgagors affect mortgage delinquency. Borrowers too may choose to be delinquent on a mortgage to address the cash flow problems resulting from a decline in income or an increase in expenses which may arise due to higher number of dependants.

Over the years, theories have been developed to explain the factors which lead to delinquency, default and subsequent foreclosure. The first being the trigger events which are those unforeseen events that drastically change one's financial status leaving them unable to make their mortgage payments. They include sudden change in marital status such as divorce, unexpected death of a bread winner in the family, ballooning medical expenses or job loss and the second being strategic behaviour where the mortgagor may choose to intention abscond mortgage obligations despite being capable of paying (Reichenberger, 2011). According to

Webb (1982), delinquency may arise when there are increases in mortgage payment while there is a decrease in income.

Turner and Smith (2008) while studying US mortgage market, found out that income is an important determinant of home ownership and that households which were racially categorised as Black or Hispanic were less likely to be homeowners than other US community groups. Furthermore, the research revealed that low-income households have significantly higher exit rates than higher income households. Brent et al (2011) argued that there are many psychological states from the time a borrower stops making payments and foreclosure. A borrower can choose to make the mortgage payment, delay payment, stop payments completely or pay off the balance of the loan through refinancing or sale of property when the payment period is due.

Danis and Pennington-Cross (2005) as cited in Brent et al (2011) examined the implications of delinquency of 30 year fixed rate subprime mortgages performance and found that loans are very delinquent for those with negative equity. They also discovered that credit scores of borrowers did not related to delinquency and default. At the same time, unemployment rates were found to have no impact on delinquency or default rates.

Ngacha (2013), suggested that there are several models for assessing the default risk of individual loan holders. They categorize them under qualitative and quantitative models. The models are used in absence of publicly available information on the quality of the borrower. The qualitative model is further divided into two; borrower specific factors and market specific factors. Borrower related factors include; reputation, leverage, volatility of earnings and collateral. The borrower's reputation involves the borrowing-lending history of the applicant. Leverage is the ratio of debt to equity. It affects the probability of its default because large amount of debt increases borrower's interest charges and pose a significant claim on its cash

flows. As with average, a volatile earning stream increases the probability that the borrower cannot meet fixed interest and principle charges. Collateral on the other hand is required to back up the loan.

Jacoby (2008) and Morton (1975) both argued that a majority of delinquencies are cured by emergency foreclosure avoidance interventions as well as front-end regulatory fixes. In addition, home mortgage delinquency management was conceptualized as an enduring component of the housing policy. On Furstenberg and Green (1974) proved that quantity factors determining delinquency rates to estimate the total delinquency risk of mortgage portfolios such as loan to value (LTV) ratio of the mortgage, age of the mortgage, income of the mortgagor as well as characteristics of the mortgaged property such as previously occupied versus existing construction were found to be significant in explaining mortgage delinquency. There are many negative effects of delinquent loans. They are known to increase the costs of servicing, losses for any institution guaranteeing timely payments, and impact payments to subordinate tranches. Elevated rates of delinquency will always impact pricing in the primary and secondary markets, even if the loans do not terminate (Danis & Pennington-Cross, 2005).

Other negative physical externalities in the neighbourhood such as visible physical deterioration of buildings exhibiting vandalism or maintenance negligence may be a cause of price declines of home values causing downward spiral of home prices. Where many mortgagors are eager to sell their properties again may increase the number of homes on the market, pushing the prices further down. Further, discounted housing prices of foreclosed properties result in market depression (Chan, Gedal, Been, & Haughwout, 2011). The research on both prime and non-prime mortgages has stressed the importance of credit scores, debt-to-income-ratios (DTIs) and loan-to-value ratios (LTVs) on default behaviour. Several studies have found that higher

initial DTIs contribute to a higher probability of default, although the effects seem to be less strong than that of LTV, and are somewhat inconsistent over time (Ding, Quercia, Ratcliffe, & Lei, 2008).

Loan (mortgage) characteristics refer to loan pricing terms. These terms are strongly significant to mortgage delinquency with the default hazard monotonously increasing with higher relative interest rates at origination and with higher margins. Sometimes both the direct effect of higher mortgage payments on the likelihood of default and ex ante risk pricing by lenders may be reflected by loan pricing terms, obscuring controls for borrower risk characteristics on mortgagee's overall assessment of mortgagor's risk. Adjustments of the interest rates, whether on fixed rate mortgage (FRM) or adjustable rate mortgage (ARM), may disrupt the streams of income sending the mortgagor into payment shock. Pre-payment penalties, negative amortization, balloon payments, interest-only mortgages, piggy-back loans, and no/low documentation loans are just but a few of mortgage characteristics which are often considered predatory. Generally, loans are considered predatory in nature when they contain terms that are abusive to borrowers and provide no tangible net benefit (Li & Ernst, 2007).

2.3.2 Credit/ Mortgage Risk

According to Basel Committee on Banking Supervision, (1999), credit risk is the oldest and important risk which banks are exposed to. Credit risk and credit risk management are increasing with time because of various reasons such as economic crises and stagnation, company bankruptcies, infraction of rules in company accounting and audits, growth of off-balance sheet derivatives, declining and volatile values of collateral, borrowing more easily by small firms, financial globalization and business investments risk-based capital requirements.

Kithinji (2010) view credit risk as the risk of losses caused by default by borrowers. A credit is considered deferred when borrowers do not meet their financial obligations. Credit risk can alternatively be defined as the risk that a borrower deteriorates in credit quality. This definition also includes the default of the borrower as the most extreme deterioration in credit worthiness. Credit risk is managed at both the transaction and portfolio levels. But, banks increasingly measure and manage credit risk on a portfolio basis instead of on a loan-by-loan basis.

Limited institutional capacity, inappropriate credit policies, volatile interest rates, poor management, inappropriate laws, low capital and liquidity levels, direct lending, massive licensing of banks, poor loan underwriting, laxity in credit assessment, poor lending practices, government interference and inadequate supervision by the central bank are considered the main source of credit risk (Kithinji, 2010). Liquidity and solvency problems are directly related to an increase in bank credit risk. Credit risk may increase if the bank lends to borrowers it does not have adequate knowledge about.

Several theories have emphasized that interest rates have an effect on credit risk because the higher the interest rate the higher the risk that the loan might not be repaid and thus the higher the credit risk. Based on structure of interest rate theories, investors expect higher returns if they are go for long term interest bearing instruments since long term interest rates are more risky than short term interest rates. Theories of financial crises on the other hand affirm that any upheavals in the financial sector have a bearing on the ability of commercial banks to extend credit and it also becomes difficult to borrowers to service their loans. Portfolio theory in the banking sector is applied in constitution of loan portfolios of banks where there are guidelines on loans that banks should extend to their clients, such as limit in terms of credit that should be

extended to third parties. The agency theory contends that many banks are managed by the managers and not by the owners. Banks that are managed by professional managers are expected to better analyse and monitor credit awarded to their clients.

2.3.3 Non-Performing Loans (NPLs)

The Central Bank of Kenya defines NPLs as those loans whose payments of interests and principal are not being serviced as per loan agreement and could put the financier to potential losses (CBK, 1997). It is important to note that non – performing loans refers to accounts whose principal or interest remains unpaid 90 days or more after due date.

Ng'etich and Wanjau (2011) defined Non-Performing Asset (NPAs) as the money lent to an individual that are in jeopardy of default. Meaning the money does not earn income and full payment of principal and interest is no longer anticipated. In most cases, the principal or interest is 90 days or more delinquent, or the maturity date has passed and payment in full has not been made. The issue of non-performing assets has, therefore, gained increasing attentions since the immediate consequence of large amount of NPAs in the banking system is a cause of bank failure.

2.4 Mortgage Operators in Kenya

In Kenya, the charges of interest passed to customers are moderated by interest rate on deposits, cost of liquidity, cost of holding cash, and operational costs. The deposits will attract interest depending on the bank's cash ratio, the overall financial stability and the type of the banking institution. By banking institution it could be a corporate bank or a network bank. Liquidity costs may be covered by both the cash maintained by the bank as a Central Bank of Kenya requirement (CBK, 1997) and the other cash kept by banks as the minimum meant to cushion the bank from unexpected customer demands. The cash held by banks in liquid form to meet day-to-

day customers' needs accounts for cost of holding cash. However, the banks have to compare the costs of cash outs and the opportunity costs associated with the cash held in liquid form. Operational costs in banks are categorised as capital costs, staff costs, and technology costs. They cover the costs of running the banks. The base rate charged by the banks takes into account all these factors. Realisation of any kind of efficiency in these operating costs would reduce the base rate charged by banks (Bandyopadhyay, 2009).

The question is: how 'high' or 'low' interest rates should be? This question is answered differently depending on the context of applicability. In developing countries, high interest rates are levied on pretext that there is prevailing information asymmetry between borrowers and lenders creating imperfect market, credit-worthiness of borrowers are doubtful, collateral values are inaccurate, and generally the institutions have a lot of inefficiency (Brueggeman & Fisher, 2011). This is counter-productive since high interest rates reverse performing loans into non-performing loans. The solution would be for banks to base their rates on proven degree of market imperfection. Again, lending rates should be lowered or adjusted very frequently with the level of real-world imperfection which decreases with pace of economic development and growth of an economy (Amonoo, Acquah, & Asmah, 2003).

Amonoo, Acquah & Asmah (2003) suggested that real rate of interest must be lower than real return on capital. It means that efficiency of financial development process should be reflected with lowered interest rates that may also reduce the level of loan defaults. Stiglitz and Weiss (1981) believe that high interest rates are responsible for higher defaults and declining bank profit.

According to Olweny (2011) interest rate risks may come in various forms such as re-pricing risk, yield curve risk and basis risk. Re-pricing risks occur if either the average yield on

bank's assets or that of the liabilities becomes sensitive to market interest rates changes. The difference in sensitivity may be an indicator of a number of possible mismatches in the characteristics of assets and liabilities. First, it could mean fixed rate assets and liabilities have different maturities. Second, it could have difference in re-pricing periods between floating rate assets and liabilities, with base rates that have maturities similar to their respective re-pricing. Third, floating rate assets and liabilities could have base rates of different maturities (assets that re-price annually based on a long-term rate along with liabilities that re-price annually based on a one-year rate, for example). Fourth, banks may have adjusted prices of assets and liabilities in countries where they are legally allowed to do so (e.g. savings deposits and some types of retail loans) and the rate-setting policies that banks follow determine the effective re-pricing behaviour of such instruments. Finally, where bank customers have an option of repaying loans or withdrawing their deposits at low cost, such decisions would influence the average pricing assets and liabilities in relation to market interest rates (Olweny, 2011).

Banks and their partners are scouting every system to boost their monitoring and managing of interest rate risk, especially risks which arise from effects of changes in market interest rates on bank net interest margins (English, 2002). Unless the interest rate is managed carefully, such effects can be very large. In 1970s, the secondary banking crisis that hit United Kingdom reflected the funding of longer-term assets with short-term liabilities. Funding of long-term, fixed rate mortgages with savings deposits also contributed to drop in net interest margins in the US thrift institutions in early 1980s. The impact was actually negative net interest income for the following two years at US thrifts, after net interest margins had averaged close to 1.5% over the preceding decade.

2.5 Literature Review Summary

Several theories have been put forward which have implications on credit risk management. These are the loanable funds theory, options theory and mortgage pricing and trigger events theory. All the theories are interest rates theories and recognize that interest rates have an effect on credit risk because the higher the interest rate the higher the risk that the loan might not be repaid and thus the higher the credit risk.

According to the loanable funds theory of interest, the rate of interest is calculated based on demand and supply of loanable funds present in the capital market (Wicksell, 1954). Options models have five variables which are; asset price relative to exercise price, volatility, expiration period, the interest rate and the dividend yield of the customer (Capozza, Green, & Hendershott, 1996). The loan to value which is the asset price relative to the exercise price and the mortgage age which is the expiry date is significant in the analysis of default.

Three major aspects of mortgage delinquency have been looked at in empirical review. They are mortgagor characteristics and delinquency, mortgage specific pricing features and the role of the two in Kenya mortgage delinquency trends. Over the years, theories have been developed to explain the factors which lead to delinquency, default and subsequent foreclosure. The first being the trigger events which are those unforeseen events that drastically change one's financial status leaving them unable to make their mortgage payments. They include divorce, death of a family member, medical expenses or job loss and the second being strategic behaviour where the borrowers choose to abandon their mortgage obligations despite being able to pay (Reichenberger, 2011).

For mortgage specific characteristics, adjustments of the interest rates, whether on fixed rate mortgage (FRM) or adjustable rate mortgage (ARM), may disrupt the streams of income

sending the mortgagor into payment shock. Mortgage characteristics which are often considered predatory include pre-payment penalties, negative amortization, balloon payments, interest-only mortgages, piggy-back loans, and no/low documentation loans. Mortgage risk may increase if the mortgagee lends to borrowers it does not have adequate knowledge about. English(2002) argued that a lot of effort is being put into developing better systems of monitoring and managing interest rate risk by banks and their supervisors. Possible effects of changes in market interest rates on bank net margins could be the source of specific bank interest rate risk. This has forced central bank of Kenya to put a base lending rate to avoid abrupt interest changes by commercial banks in Kenya.

2.6 Conceptual framework

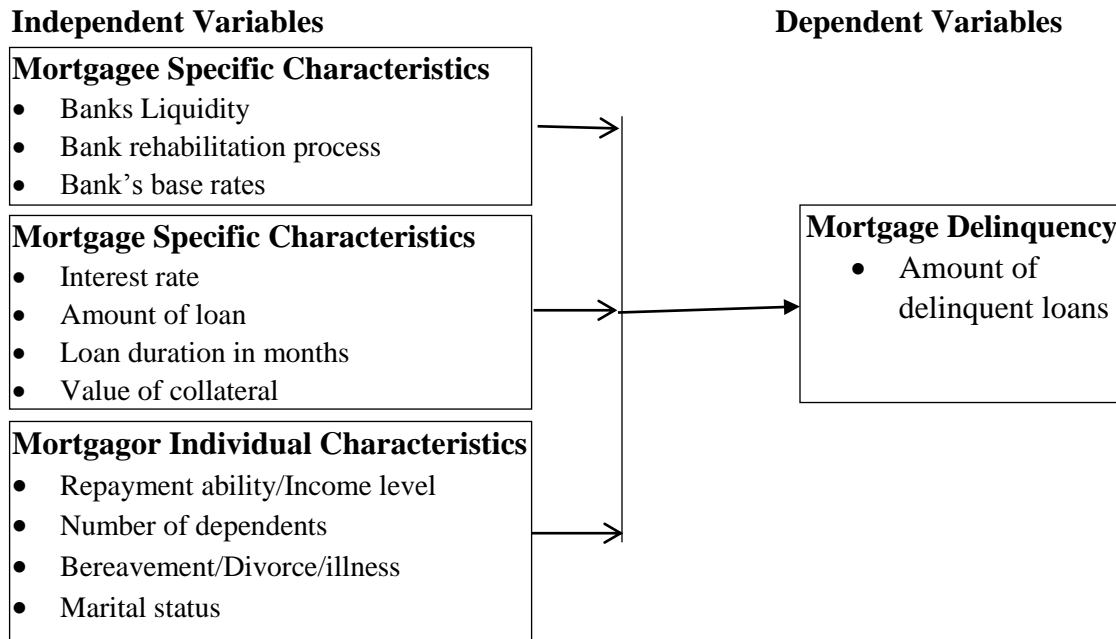
A conceptual framework is a collection of inter related group of ideas that are broad based on theories. That is, a set of prepositions, which are derived from and supported by data or evidence taken from fields of inquiry that are relevant (Masese, 2011).Conceptual framework is a hypothesized model identifying the concepts under study and their relationships. The purpose of a conceptual framework is to help the reader to quickly see the proposed relationships (Mugenda & Mugenda, 2003). The study will investigate the Role of Social, Political and Economic determinants of Mortgage Delinquency in Kenya.

Based on the reviewed literature, this study proposes a conceptual framework in which the dependent variable is mortgage delinquency and the independent variables are age of borrower, education of borrower, family size, marital status, interest rate, amount of loan, loan duration in months, value of collateral, civil strife/ acts of terrorism. The conceptual framework is shown in Figure 1 below and is presented in a model form expressing Role of Social, Political

and Economic determinants of Mortgage Delinquency in Kenya as depicted in the linear regression model in 3.6 of chapter three.

FIGURE 1

Conceptual Framework



Source: Author (2015)

Mortgage delinquency in the above diagram is explained by three major variables, that is, mortgagee specific characteristics, mortgage specific characteristics and mortgagor individual characteristics. The main sources of mortgage delinquency from mortgagee specific perspective are inadequate liquidity level, bank rehabilitation process which involves applying all management techniques to ensure mortgages are paid even if they are late and banks base rates. However, banks base rate may have little influence given the recent directive of Central Bank of Kenya to set 9 percent as the default base rate (Kithinji, 2010).

Mortgage specific characteristics that the research will utilize include the interest rate, amount of loan, loan duration in months and value of collateral. According to (Ngacha, 2013) this information is critical assessing the default risk of mortgages. Mortgagor individual characteristics refer to trigger events which affect social status of the mortgagor. The social status changes are negative change in income level, increased number of dependents, bereavement, divorce, illness or change of marital status from single to married (Berry, Dalton, & Nelson, 2010).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the methodology of the study. It gives the specific procedure that was followed in undertaking the study. The research design techniques, target population of the study, sample design, data collection methods and data analysis techniques are described in this chapter.

3.2 Research design

The researcher adopted a descriptive research approach to carry out the study since it utilized elements of both qualitative and quantitative research methodologies. A descriptive research design attempts to describe or define a system, often by creating a profile of a group of problems, people or events, through the collection of data and tabulation of the frequencies on research variables or their interaction (Cooper and Schindler 2006). A descriptive research defines questions, people surveyed and the method of analysis prior to beginning data collection. Descriptive approach is also justified since it is efficient in collecting large amounts of information within a short time. Also, this research design does not permit manipulation of the variables as Bichanga and Aseyo (2013) observed.

3.3 Target Population

The target population of this study was the 76 financial officers at the mortgage department of the 38 registered commercial banks in Kenya offering mortgages (CBK 2013). The study focussed more on the two senior staff who are directly dealing with the mortgages since they are the ones conversant with the subject matter of the study. According to Mugenda and Mugenda (1999), a target population should have some observable characteristics to which the researcher

intends to generalize the results of the study. A census approach was therefore used due to the population size. A census is where data is collected from all members of the population (Hair, Celsi, Money, Samouel & Page, 2011)

3.4 Data collection Instruments and Procedures

Data collection instruments and procedures is the process of gathering and measuring information on targeted variables.

3.4.1 Data Collection Instruments

The study used primary data. The data was obtained through self-administered questionnaires with closed and open-ended questions. A 5-point likert scale was used to determine the determinants of mortgage delinquency amongst commercial banks mortgagees in Kenya where 1=Very low extent, 2=Low extent, 3=Neutral, 4= Some extent and 5=Great extent. The questionnaires had both structured and unstructured questions and were administered through drop and pick method to respondents. The closed ended questions enabled the researcher to collect quantitative data while open ended questions enabled the researcher to collect qualitative data. The questionnaire was divided into two sections. Section one was about general information about respondents while section two about issues concerning determinants of mortgage delinquency.

3.4.2 Data Collection Procedures

The questionnaires were hand delivered to the respective banks. The Researcher then booked appointments with the respondents to fill in the questionnaire. This was important as it helped in clarification where need be without necessarily leading the respondent. Nevertheless there were instances where the questionnaires could not be completed at the appointed time in which case

the questionnaires were left with the respondents and picked later. An introductory letter from the University was taken along to enable administering of the questionnaires.

3.5 Testing for Validity and Reliability

The questionnaire was subjected to both validity and reliability test to check for consistency and to ascertain how reliable the questions were before distributing them to the interviewees.

3.5.1 Validity Testing -Piloting

To ascertain the validity of the questionnaire, content validity and pattern matrix were used. Content validity draws an inference from test scores to a large domain of items similar to those on the test (Polkinghorne, 1988). Content validity was concerned with sample population representativeness i.e. the knowledge and skills covered by the test items should be representative to the larger domain of knowledge and skills.

The instrument was administered by the researcher after which a discussion was made to determine the suitability, clarity and relevance of the instruments for the final study. Ambiguous and inadequate items were revised in order to elicit the required information and to improve the quality of the instruments.

To establish the content validity of the research instrument the student sought the opinions of experts in the field of study to ensure that the tool was measuring what is supposed to be measured.

Pattern matrix is used to identify underlying constructs or factors that explain the correlations among a set of items. They are often used to summarize a large number of items with a smaller number of derived items called factors.

3.5.2 Reliability Testing

To test the reliability of the instruments, internal consistency techniques were applied using Cronbach's Alpha. The alpha values ranges between 0 and 1 with reliability increasing with the increase in value. Coefficient of 06-07 is a commonly accepted rule of thumb that indicates acceptable reliability and 0.8 or higher indicated good reliability (Mugenda 2008).

3.6 Data Analysis

Primary data from questionnaires was analysed using exploratory and confirmatory factor analysis to represent a true picture of delinquency determinants amongst commercial banks mortgagees in Kenya. The researcher chose exploratory factor analysis (EFA) because it detects the constructs, i.e., factors that underlie a dataset based on the correlations between variables (in this case, questionnaire items) (Field, 2009; Tabachnik & Fidell, 2001). The factors that explain the highest proportion of variance the variables share are expected to represent the underlying constructs on causes of delinquency in mortgages. Confirmatory factor analysis (CFA) which is a statistical technique used to verify the factor structure of a set of observed variables complemented EFA to ensure questionnaire dataset integrity. CFA allows the researcher to test the hypothesis that a relationship between observed variables and their underlying latent constructs exists. The researcher uses knowledge of the theory, empirical research, or both, postulates the relationship pattern a priori and then tests the hypothesis statistically(Tang, 2010).

Quantitative analysis involved the use of pie charts, bar graphs, means and percentages to present the information. The processed data was presented in tables, graphs and explanation given in prose to explain determinants of delinquency amongst commercial banks mortgagees in Kenya. The study deployed inferential statistics that involved the use of ANOVAs and regression

analysis to study the effect of independent variable on the dependent variables. The regression equation was;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \dots\dots\dots (i)$$

Where:

The dependent variable (Y) is measured by delinquent loans in Kenya shillings (Kshs).

In this study, delinquent loans are defined as loans delayed for payment for one month and more since its due date. A Borrower is considered delinquent on his mortgage when one payment has been completely missed and a second payment is due. Once a Borrower misses three or more payments, he is considered to have defaulted. Lenders may then proceed with foreclosure.

The analysed independent variables which influence the loans repayment performance are:

Y_1 = Delinquency of loan

β_0 = Constant

$\beta_1 \dots \beta_3$ = Co-efficient indicator for loan delinquency

ε =Error Term

X_1 - Banks liquidity

X_2 - Bank rehabilitation process

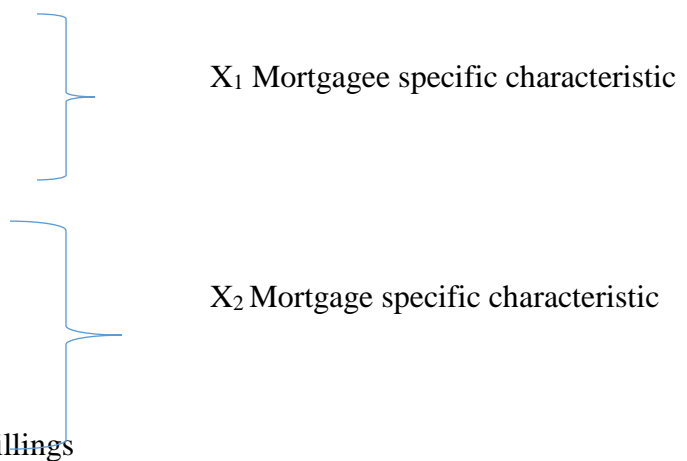
X_3 - Bank's base rate

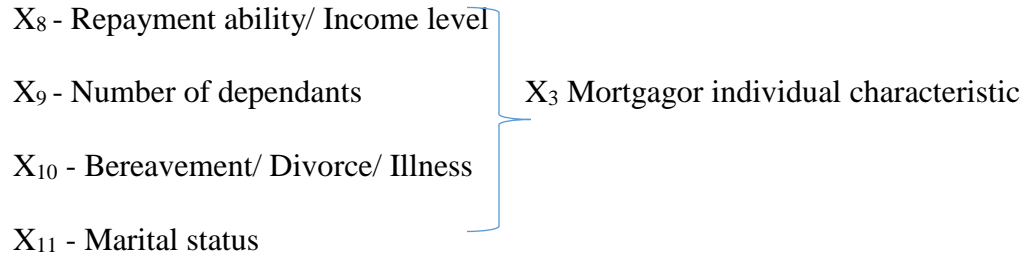
X_4 - Interest rate

X_5 - Amount of loan

X_6 - Loan duration in months

X_7 - Value of collateral in Kenya shillings





Loan repayment is the Expected Monthly Instalment of the loan that includes the loan principal and the interest element (Stiglitz & Weiss, 1981). Interest rate is the price a borrower pays for the use of money they borrow from a lender/financial institutions or fee paid on borrowed assets (Ng'etich & Wanjau, 2011).

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATIONS

4.1 Introduction

This chapter presents and discusses the results and interpretations of the findings. Data analysis was done using descriptive, statistical, and regression analysis. Descriptive analysis was used to address the determinants of mortgage delinquency, regression analysis was used to establish the research objectives of investigating determinants of mortgage delinquency in Kenya and finally ANOVA test was used to compare the effects of mortgage delinquency.

4.1.1 Response Rate

The study targeted a total of 76 respondents. However, only 44 respondents responded and returned their filled questionnaires. This represents 58% of the questionnaires issued to the respondents. The low rate was due to the bank policies on issue of confidentiality hence limited the respondent rates. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting. The non-response bias was eliminated by extrapolation. The filled questionnaires were multiplied by two. This was based on O'neal (1979); Stinchcombe, Jones and Sheatley (1995); Montaquila et al. (2008) who posits that there are groups of respondents who resemble non respondents.

4.1.2 Validity Test

The initial solution was determined using Principal Component Analysis (PCA) method. The PCA method was preferred because it allowed for reduction of the data set to a more manageable size while retaining as much of the original information. Appendix X shows that factor one had higher debt to income ratio's, higher loan to value ratios, company's lending policy, mortgagor credit risk and incorporating credit bureaus information. The second factor had the majority

components loading with Government interference, credit scores, strategic borrowers, volatility of household income, credit scores and credit committee. The third factor had trigger events, volatility in household income & cash flow problems while the fourth factor had mortgage specific information and inadequate information.

4.1.3 Reliability Analysis

TABLE 1

Reliability Statistics

Cronbach's Alpha	N of Items
0.82	44

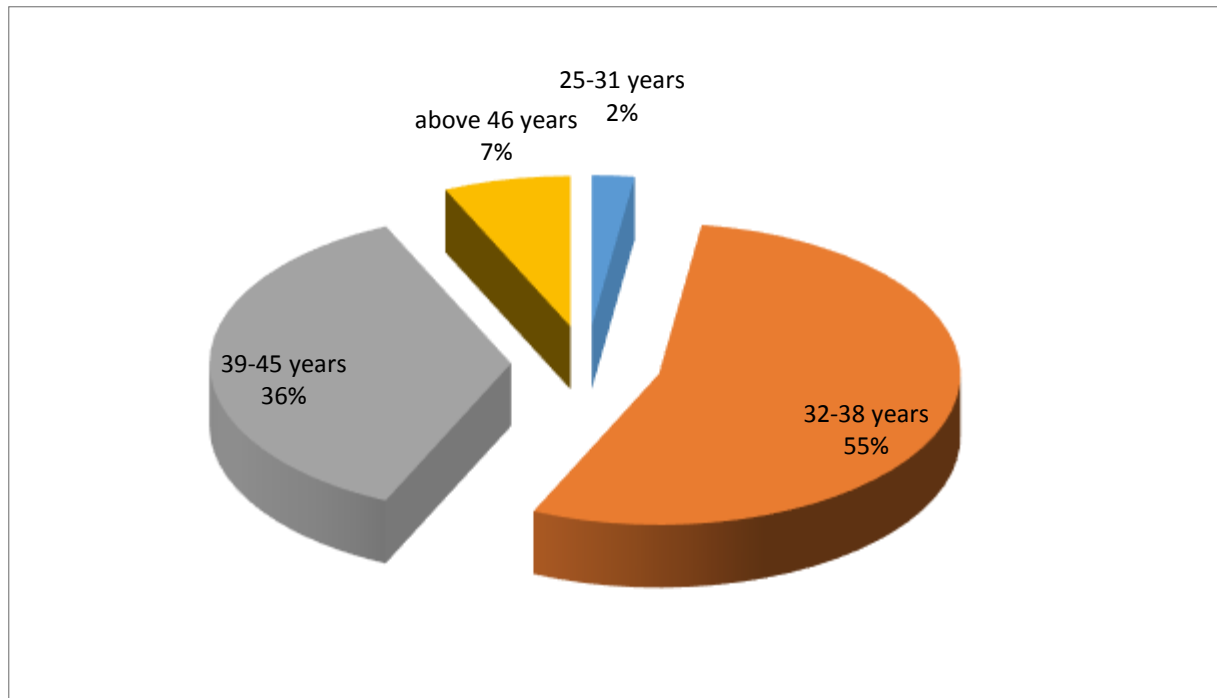
Source: Author (2015)

The reliability of the questionnaire was evaluated through Cronbach's Alpha which measures internal consistency. The Alpha measures internal consistency by establishing if certain items measures the same construct. The reliability value was 0.820 indicated good reliability. (Mugenda, 2008)

4.2 General Information

FIGURE 2

Age of Respondents

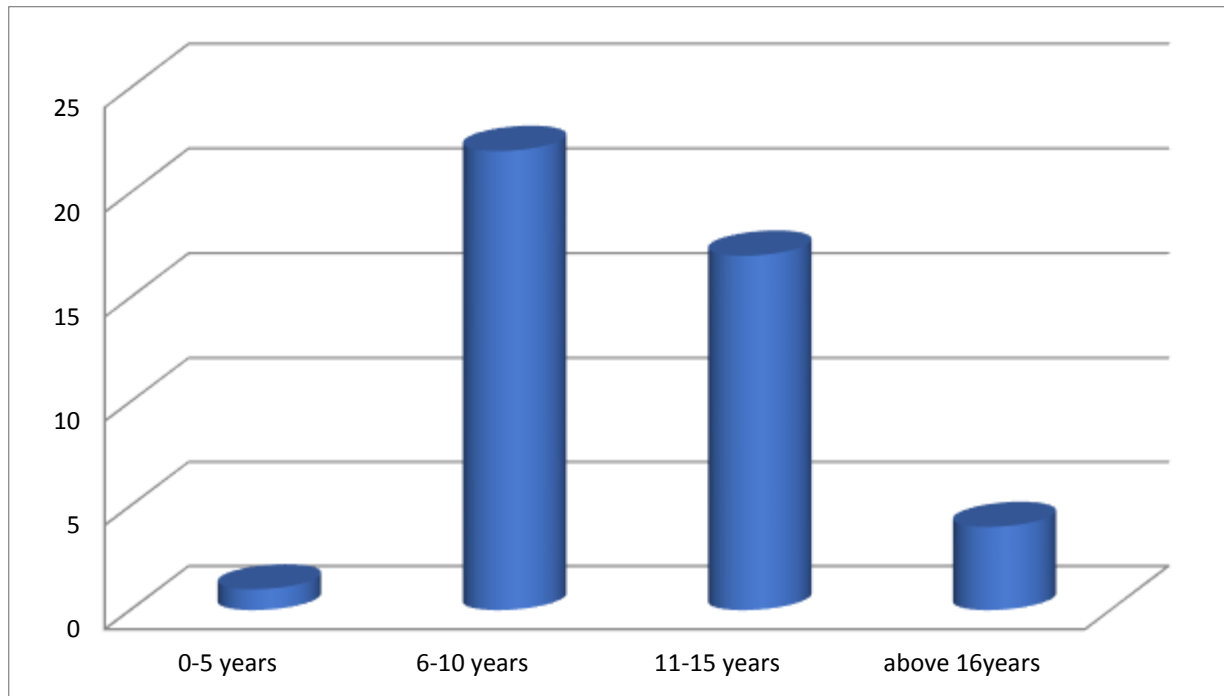


Source: Author (2015)

The study sought to find out the age of the respondents. According to the findings, majority (54.5%) of the respondents aged between 32-38 years followed with 36.4 % of the age bracket between 39-45 years and finally above 46years was only represented 6.8 %.

FIGURE 3.

Work Experience of Respondents

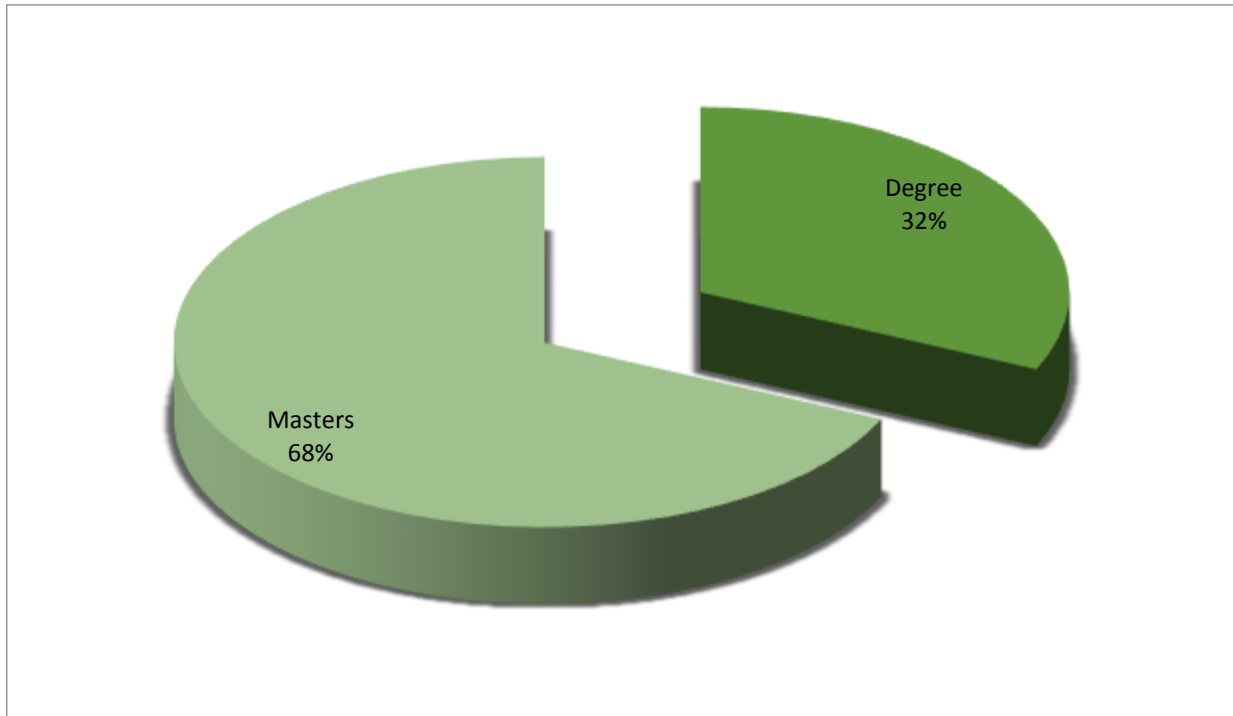


Source: Author (2015)

The study sought to find out the period the respondents had been on their positions. From the findings, majority (50%) of respondent had worked for 6-10 years followed by (38.6%) for 11-15 years and finally above 16 years were represented by (9.1%) this means that the respondents had adequate working experience with bank and the information given was reliable.

FIGURE 4

Academic Qualification



Source: Author (2015)

The study sought to find out the level of education of the respondents. According to the findings, majority (68.2%) of the respondents held master's degree followed by (31.8%) of the respondent who were degree holders. This means that respondent held the necessary skills and qualifications to perform their duties.

TABLE 2
Demographic Profile of the Respondents

	Frequency	Percent	Valid Percent
Age			
25-31 years	1	2.3	2.3
32-38 years	24	54.5	54.5
39-45 years	16	36.4	36.4
above 46 years	3	6.8	6.8
How many years have you been in the banking industry			
0-5 years	1	2.3	2.3
6-10 years	22	50.0	50.0
11-15 years	17	38.6	38.6
above 16years	4	9.1	9.1
Total	44	100.0	100.0
What is your highest academic qualification achieved			
Degree	14	31.8	31.8
Masters	30	68.2	68.2
Total	44	100.0	100.0

4.3 Factors Influencing mortgage delinquency

The study used factor analysis to reduce the many variables to few factors. The study adopted The KMO (Kaiser-Meyer-Olkin) statistics and Bartlett's test of Sphericity as pre-test analysis. Appendix IV shows KMO statistics of 0.945. Hutchison and Sofroniu (1999) endorsed KMO values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb, hence the value 0.945 shows that sample was very good in this study. The Bartlett's test of Sphericity resulted in a p-value =0.000 and was considered significant as it was less than threshold of 0.005(Tabachnich&Fidell, 2007). This meant that the variables in the data set were correlated and hence good for the factor analysis.

The initial solution was determined using Principal Component Analysis (PCA) method. The PCA method was preferred because it allowed for reduction of the data set to a more manageable size while retaining as much of the original information. Appendix V shows that the unrotated solution revealed 44 components out of which four components explained 45.329 % of the variations leaving 54.61% of the variations unexplained. This necessitated factor rotation to explain the unexplained components.

4.3.1 Factor rotation and interpretation from the mortgage delinquency

To determine the effect of mortgage delinquency amongst commercial banks mortgagees in Kenya, Kaiser Normalization rotation method was applied for proper explanation of the mortgage delinquency as shown in table 3.

TABLE 3**Kaiser Normalisation Rotation**

Variables	1	2	3
Higher loan-to-value ratios enhances mortgage delinquency	0.833		
Higher loan-to-value ratios (LTVs) contribute to a higher probability of delinquency.	0.797		
Higher debt-to-income-ratios (DTIs) contribute to a higher probability of delinquency	0.7		
Higher debt-to-income ratios enhances mortgage delinquency	0.696		
Strategic borrowers choose to abandon their mortgage obligations despite being able to pay		0.679	
Credit scores are negatively related to mortgage delinquency		0.628	
Mortgage repayments slows down with government interference		0.624	
Trigger events such as bereavement, divorce and illness change one's financial status that enhances mortgage delinquency			0.653
Some trigger events such as bereavement, divorce, illness change one's financial status leaving them unable to make their mortgage payments.			0.652
Volatility in household's income enhances mortgage delinquency			0.603

Extraction Method: Principal Component Analysis.

The Varimax rotation resulted in 3 components, a total of four items loaded on component 1 with the items; Higher loan-to-value ratios enhances mortgage delinquency=0.833, Higher loan-to-value ratios (LTVs) contribute to a higher probability of delinquency. =0.797, Higher debt-to-income-ratios (DTIs) contribute to a higher probability of delinquency = 0.7, Higher debt-to-income ratios enhances mortgage delinquency = 0.696

Three items were loaded in component 2 and the order of factor loading were, Strategic borrowers choose to abandon their mortgage obligations despite being able to pay = 0.679, Credit scores are negatively related to mortgage delinquency = 0.628, Mortgage repayments slows down with government interference = 0.624

Variation in component three were explained to great extent by 3 items as follows; Trigger events such as bereavement, divorce and illness change one's financial status that enhances mortgage delinquency = 0.653, Some trigger events such as bereavement, divorce, illness change one's financial status leaving them unable to make their mortgage payments = 0.652, Volatility in household's income enhances mortgage delinquency = 0.603.

4.4 Test of Research Hypotheses using Regression Analysis

The study sought to establish the determinants of mortgage delinquency amongst Kenyan commercial banks. To do this, regression analysis was adopted in testing the research hypotheses. Assuming a linear relationship between mortgage characteristic and mortgage delinquency, the study used the Ordinary Least Square (OLS) method of estimation. Using OLS, a regression line of best fit was sought. Regression analysis was used to model the relationship between mortgage characteristic and mortgage delinquency perceived. It was important in determining the magnitude of the resulting relationship and it was used to make prediction based on resulting model.

Before the regression analysis, the data was subjected to assumptions of regression analysis. First the data set was tested for normality. The three key variable; mortgage individual characteristic, mortgage specific characteristic and role of mortgage characteristic were subjected to a normality test using stem and leaf graphical display and a normal distribution curve as shown in Appendices VI, VII & VIII. The resulting stem and leaf display confirmed that the data set was normally distributed. Secondly, the data was tested for existence of multicollinearity. The independent variables were correlated as shown in Appendix IX, resulting in a significant relationship ($p = 0.000$) with Pearson ($r = 0.326$, $r=0.296$). The weak relationship meant the data did not suffer from multicollinearity. Thirdly the data was tested for linearity. The test for linearity using scatter plot revealed that the independent variables had linear relationship with the dependent variable. The fourth assumption tested was that of equal variance (homoscedasticity). The residual plots showed that the error term (ϵ_i) was normally and identically independently distributed with mean zero and constant variance. This meant the error variance in mortgage characteristic was constant along mortgage delinquency. Hence the data did not suffer from heteroscedasticity and instead was homoscedastic. The study proceeded with regression analysis.

4.4.1 Effect of mortgage individual characteristic on mortgage delinquency

TABLE 4
ANOVA of Mortgage Individual Characteristic

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.000	1	.000	.000	.994b
Residual	69.159	42	1.647		
Total	69.159	43			

a. Dependent Variable: mortgage delinquency

b. Predictors: (Constant), mortgage individual characteristic

The probability value of 0.994 indicates that the regression relationship was not significant in predicting the effect of mortgage individual characteristic and mortgage delinquency. The F calculated at 5% level of significance was 0.000 is less than 0.05, this shows that the model was not significant.

TABLE 5
Model summary of Mortgage Individual Characteristic

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.001 ^a	.000	-.024	1.28322

a. Predictors: (Constant), mortgage individual characteristic

The model had coefficient of determination (R^2) = 0.001, indicating that 0.1% of the variation in mortgage delinquency was explained by the model leaving 99.9% of

the variations unexplained.

TABLE 6

Coefficient of Mortgage Individual Characteristic

	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	2.191	1.803			1.215	.231
Mortgage individual characteristic	.004	.488	.001		.008	.994

Table 6 presents the coefficients of mortgage individual characteristic. In reference to model one, had a p-value of 0.994. The study therefore failed to reject the research hypotheses H_{01} at 5% level and observed that mortgage individual characteristic has no significant effect on mortgage delinquency

4.4.2 Effect of mortgage specific characteristic on mortgage delinquency

TABLE 7

ANOVA of Mortgage Specific Characteristic

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	4.791	1	4.791	3.126	.084 ^b
Residual	64.368	42	1.533		
Total	69.159	43			

a. Dependent Variable: mortgage delinquency

b. Predictors: (Constant), mortgage specific characteristic

The probability value of 0.084 indicates that the regression relationship was slightly significant in predicting the effect of mortgage specific characteristic and mortgage delinquency. The F calculated at 5% level of

significance was 3.126 is greater than 0.05, this shows that the model was significant.

TABLE 8

Model summary of Mortgage Specific Characteristic

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.263 ^a	.069	.047	1.23797

a. Predictors: (Constant), mortgage specific characteristic

The model had coefficient of determination (R^2) = 0.263, indicating that 26.3% of the variation in mortgage delinquency was explained by the model leaving 73.7% of the variations unexplained. This meant that model one provides a very weak fit.

TABLE 9

Coefficients of Mortgage Specific Characteristic

Model		Unstandardized		Standardized		
		Coefficients		Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-1.654	2.190		-.755	.454
	Mortgage specific characteristic	.959	.542	.263	1.768	.084

4.4.3 Effect of mortgage characteristic on mortgage delinquency

TABLE 10

ANOVA of Mortgage Characteristics

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	11.881	1	11.881	8.712	.005 ^b
Residual	57.278	42	1.364		
Total	69.159	43			

a) Dependent Variable: mortgage delinquency

The probability value of 0.005 indicates that the regression relationship was highly significant in predicting the effect of mortgage characteristics and mortgage delinquency. The F calculated at 5% level of significance was 8.712 is greater than 0.05, this shows that the model was significant.

TABLE 11

Model Summary Mortgage Delinquency

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.414 ^a	.172	.152	1.16780

The model had coefficient of determination of 0.414 indicating that 41-4% of the variation in mortgage delinquency was explained by the model leaving 58.6% of the variations unexplained. This meant that model provided a moderate weak fit.

TABLE 12

Coefficients of Mortgage Delinquency

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	-5.670	2.674			-2.121	.040
Mortgage characteristic	1.952	.661	.414		2.952	.005

a. Dependent Variable: mortgage delinquency

Table 12 presents the coefficients of mortgage characteristic. In reference to model one, had a p-value of 0.005. The study therefore rejected the research hypotheses H_{01} at 5% level and observed that mortgage characteristic has significant effect on mortgage delinquency.

4.4.4 Evaluation of the Model Predicted by Mortgage delinquency

The study sought to establish the determinants of mortgage delinquency amongst Kenyan commercial banks. To do this, regression analysis was adopted in testing the research hypotheses.

The regression model was:

$$ML = \beta_0 + \beta_1 MC + \beta_2 MSC + \beta_3 MIC$$

Where

ML - Mortgage delinquency,

β_0 - Constant

MC - Mortgage characteristic,

MSC - Mortgage specific characteristic,

MIC - Mortgage individual characteristic

TABLE 13

Model Summary of Mortgage Delinquency

Model	R	R Square	Adjusted	
			R Square	Std. Error of the Estimate
1	.524 ^a	.274	.220	1.12026

R-Square (coefficient of determination) is a commonly used statistic to evaluate model fit. R-Square is 1 minus the ratio of residual variability. The adjusted R squared also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. 22% of the changes in mortgage delinquency variables could be attributed to the combined effect of the predictor variables.

TABLE 14

Regression coefficients of the relationship between mortgage delinquency and three predictive variables

Model	Unstandardized		Standardized		t	Sig.
	Coefficients		Coefficients			
	B	Std. Error	Beta			
1 (Constant)	-7.015	2.864			-2.450	.019
Mortgage characteristic	2.005	.676	.426		2.964	.005
Mortgage specific characteristic	1.359	.638	.373		2.130	.039
Mortgage individual characteristic	-1.180	.560	-.373		-2.109	.041

a. Dependent Variable: mortgage delinquency

The findings presented has established that taking all factors into account

(Mortgage characteristic, Mortgage specific characteristic and Mortgage individual characteristic) constant at zero mortgage delinquency will be -7.015. The findings presented also show that taking all other independent variables at zero, a unit increase in Mortgage characteristic would lead to a 2.005 increase in mortgage delinquency. Further, the findings show that a unit increase in Mortgage specific characteristic would lead to a 1.359 increase in mortgage delinquency. In addition, the findings show that a unit increase in Mortgage individual characteristic would lead to a 1.18 decrease in mortgage delinquency. Overall, mortgage characteristic had the highest effect on mortgage delinquency followed by mortgage specific characteristic while mortgage individual characteristic had the least effect on mortgage delinquency. This notwithstanding, all variables were significant since the P values were less than 0.05.

TABLE 15

ANOVA results between Mortgage Delinquency and Predictor Variables

Mode		Sum	of	Mean		
1		Squares	Df	Square	F	Sig.
1	Regression	18.96	3	6.32	5.036	.005b
	Residual	50.199	40	1.255		
	Total	69.159	43			

a. Dependent Variable: mortgagedelinquency

b. Predictors: (Constant), mortgageindividualcharacteristic, mortgageespecific characteristic, mortgageespecificcharacteristic

The probability value of 0.005 indicates that the regression relationship was highly significant in predicting how mortgage individual characteristics, mortgage specific characteristics and mortgage characteristics determine mortgage

delinquency. The F calculated at 5% level of significance was 5.036.

4.5 Path Diagram

Appendix XI shows the results of multivariate tests for normality outputted by AMOS. Since most of the variables had skew or kurtosis value within + 3, the observed departures from normality were not too significant. Thus, Maximum Likelihood Estimation was used in AMOS calculations.

The model had a CMIN = 83.299, $df = 57$, $p < .05$ and a RMSEA = .144, PCLOSE < .05, suggesting that the model may not have fitted the data very well. However, fit measures of NFI = .778, TLI = .879, and CFI = .911, suggested that the model fitted well the data. The model chi-square has been criticised for being typically conservative (that is, prone to Type II error) and of always returning a significant p value when sample size is large. RMSEA tends to be misleading when the d.f is small. Thus, the fit of the model could have been improved by adding more paths, something that could have been theoretically unsound.

The study findings showed that there was a positive significant relationship between mortgage specific characteristics and mortgage delinquency among commercial banks in Kenya ($\beta=0.793$, P vale <0.05). This implies that an increase in mortgage specific characteristics is associated with an increase in mortgage delinquency among commercial banks in Kenya.

Moreover, the study findings showed a negative significant relationship between mortgage characteristics and mortgage delinquency among commercial banks in Kenya ($\beta=-1.218$, P vale >0.05). This implies that a unit increase in mortgage characteristics is associated with 1.218 units decrease in mortgage delinquency.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of findings, conclusions and the recommendations of the research. This was based on the findings obtained and suggestions for further research. The objective of the study was to establish the determinants of mortgage delinquency amongst commercial banks mortgagees in Kenya.

5.2 Summary of Findings

This study intended to carry out survey of determinants of mortgage delinquency amongst bank mortgagee's in Kenya. The study found that mortgage individual characteristics had no significant effect on mortgage delinquency. The ANOVA output presented in Table 4, showed model was significant (p-value = 0.994) at 0.05 level in explaining the linear relationship between mortgage individual characteristic and mortgage delinquency. The model had coefficient of determination (R^2) = 0.001, indicating that 0.1% of the variation in mortgage delinquency was explained by the model leaving 99.9% of the variations unexplained. This meant that the model provided a very weak fit. The model had a p-value of 0.994. The study therefore failed to reject the research hypotheses H_{01} at 5% level and observed that mortgage individual characteristic has no significant effect on mortgage delinquency.

The study found that mortgage specific characteristics had significant effect on mortgage delinquency. The ANOVA output presented in Table 7, showed model was significant (p-value = 0.084) at 0.05 level in explaining the linear relationship between mortgage specific characteristic

and mortgage delinquency. Table 8 showed that the model had coefficient of determination (R^2) = 0.263, indicating that 26.3% of the variation in mortgage delinquency was explained by the model leaving 73.7% of the variations unexplained. This meant that the model provided a very weak fit. It had a p-value of 0.084. The study therefore conclude that mortgage specific characteristic has significant effect on mortgage delinquency.

The study found out that mortgage characteristics had a significant effect on mortgage delinquency. The ANOVA output presented in Table 10, showed model was significant (p-value = 0.005) at 0.05 level in explaining the linear relationship between mortgage characteristic and mortgage delinquency. Table 10 showed model had coefficient of determination (R^2) = 0.414, indicating that 41.4% of the variation in mortgage delinquency was explained by the model leaving 58.6% of the variations unexplained. This meant that model provided a moderate weak fit. Table 12 presented the coefficients of mortgage characteristic. In reference to the model, it had a p-value of 0.005. The study therefore rejected the research hypotheses H_{01} at 5% level and observed that mortgage characteristic has significant effect on mortgage delinquency.

The regression established that taking all factors into account (mortgage individual characteristics, mortgage specific characteristics and mortgage characteristics) had an $R^2 = 0.524$. This was interpreted to mean model one provided a good fit; implying mortgage characteristic of value had a significant positive effect on mortgage delinquency. The $R^2 = 0.524$, further meant that 52.4% of the variations in the mortgage delinquency was explained by combined effect of predictor variables as shown in table .13

Mortgage individual characteristic had a beta value ($\beta_1 = 2.005$). This meant that on an integrated scale, a unit change in Mortgage characteristic resulted in a 2.005 positive change in mortgage delinquency. A unit change in mortgage specific characteristic ($\beta_2 = 1.359$) would

result in a 1.359 positive change in mortgage delinquency and finally a unit change in mortgage characteristic ($\beta_3 = -1.183$) resulted in a negative change in mortgage delinquency.

A conclusion therefore can be drawn from the study that mortgage characteristic and mortgage specific characteristics do affect mortgage delinquency.

5.3 Conclusions

The study has undoubtedly concluded that to enable mortgagor's have ability to pay back their mortgages in time and minimizing the delinquency rate, the financial institutions should introduce programs aimed at making better mortgage characteristics. The integrated model formulated from the integrated regression analysis of the survey was;

$$ML = -7.015 + 2.005MC + 1.359MSC - 1.18MIC \dots\dots\dots(ii)$$

The integrated model generated a R^2 of 0.524 which leads into a general conclusion that the model representing the various programs on mortgage delinquency explains 52.4% of variations in determinants of mortgage delinquency.

The study concludes that mortgage individual characteristics have no significant effect on mortgage delinquency. The variable results to coefficient of determinants (R^2) of 0.001 implying that only 0.1 % of changes in mortgage delinquency was explained by the model leaving 99.9 % of the changes not explained. This therefore implies a very weak on the model. This conclusion echoes Danis and Pennington-Cross (2005) study which they concluded that unemployment rates were found to have no impact on delinquency or default rates This conclusion however contradicts Turner and Smith (2008) findings while studying the US mortgage market where they found out that income was an important determinant of home ownership. The conclusion also contradicts Webb (1982) where he proposed that volatility in the household's income is the variable that causes mortgage delinquency. The conclusion also contradicts the trigger events

theory which stipulates that unexpected events such as unemployment and divorce shock the borrower's ability to repay back their mortgage.

The survey arrived at the conclusion that specific characteristics have significant effect on mortgage delinquency. Mortgage specific characteristics variable resulted into a coefficient of determinants (R²) of 0.263 an indication that only 26.3 % of changes in mortgage delinquency is explained by the model leaving out 73.7% as unexplained and therefore providing a weak fit for the model. This conclusion echoes Furstenberg and Green (1974) study where they argued that characteristics of mortgaged property was found to be significant in explaining mortgage delinquency.

The study concludes that a mortgage characteristic greatly affects mortgage delinquency. The Bank's liquidity, Bank's liquidation process and Bank's base rate do determine the mortgagor's ability to pay back the mortgage in time. This variable resulted to a coefficient of determination (R²) of 0.414 an indication that 41.4% of changes in mortgage delinquency was explained for by the model leaving only 58.6% of the changes not explained. This represents a moderately weak fit model. This conclusion echoes Carpozza, Green & Hendershott (1996) study which they concluded that the loan to value which is the assets price relative to the exercise price and the mortgage age which is the expiry date is significant in the analysis of default.

5.4 Recommendations

The integrated model on the variables on mortgage delinquency leads to a beta value of 2.005 which means that on an integrated scale, a unit change in mortgage characteristic results into 2.005 positive change in mortgage delinquency. A unit change in mortgage specific characteristic of beta value of 1.359 would likewise result to 1.359 positive variations in

mortgage delinquency and finally a unit change in mortgage individual characteristic to - 1.183 change in mortgage delinquency.

The study recommends that the commercial banks should involve the board's credit committee in selecting and vetting the mortgage applicants. The commercial bank's credit committee should deploy bank rehabilitation process by calling clients to pay overdue mortgages. The commercial banks should ensure that the interest rates charged on various types of mortgages cover the cost and meet good profit margin. The commercial bank's lending policy should be periodically reviewed to reflect the prevailing economic conditions. The commercial banks should ensure that the lending authority and mortgage approval is decentralized, and in addition to this the commercial banks should utilize information from credit reference bureaus in appraising the customer's mortgages.

5.5 Suggestions for Further Research

Other studies should be carried out in other financial institutions which offer mortgages to find out the determinants of mortgage delinquency in those financial institutions. The study focused on commercial banks mortgagees in Kenya thus another study should be carried out to find out the determinants of mortgage delinquency in other financial institutions providing mortgages other than commercial banks.

REFERENCES

- ADB. (2014). *Country Strategy Paper 2014-2018*. African Development Bank Group. Nairobi: East Africa Resource Center.
- Amonoo, E., Acquah, P. K., & Asmah, E. E. (2003). *The Impact of Interest Rates on Demand for Credit and Loan Repayment by the Poor and SME's in Ghana*. Geneva: ILO Publications Bureau.
- Arttachariya, P. (2005). *A Handbook on Thesis Writing*. Bangkok: Graduate School of Business.
- Arvanitis, Y. (2013). African Housing Dynamics: Lessons from the Kenyan Market. *Africa Economic Brief*, 4(3), 1-12.
- Bandyopadhyay, G. (2009). *Banking the Unbanked: Going Mobile in Africa*. Bangalore: Infosys Technologies.
- Berry, M., Dalton, T., & Nelson, A. (2010). *Mortgage Default in Australia: Nature, Causes and Social and Economic Impacts*. Melbourne: Australian Housing and Urban Research Institute.
- Bichanga, W. O., & Aseyo, L. (2013). Causes of Loan Default Within Micro Finance Institutions in Kenya. *Interdisciplinary Journal of Contemporary Research in Business*, 316-335.
- Brent, W., Kelly, L., Lindsey-Taliefero, D., & Price, R. (2011). Determinants of Mortgage Delinquency. *Journal of Business & Economics Research*, 9(2), 27-48.
- Brueggeman, W. B., & Fisher, J. D. (2011). *Real Estate Finance & Investments* (14th ed.). New York: McGraw-Hill/Irwin.
- Capozza, D. R., Green, R. K., & Hendershott, P. H. (1996). Taxes, Mortgage Borrowing, and Residential Land Prices. (H. A. Gale, Ed.) *Economic Effects of Fundamental Tax Reform*, 1-14.
- CBK. (1997). *Reforming Kenya's Financial Sector*. Nairobi: Monthly Economic Review.
- CBK. (2013). *CBK Annual Reports and Financial Statements 2013*. Nairobi: Central Bank of Kenya.
- CBK. (2013). *Credit Officer Survey*. Nairobi: Central Bank of Kenya.
- Chan, S., Gedal, M., Been, V., & Haughwout, A. (2011). *The Role of Neighborhood Characteristics in Mortgage Default Risk: Evidence from New York City*. New York: New York University Wagner School.
- CMA. (2010). *Capital Raising Opportunities for SMEs: The Development of Micro-cap Security Markets in Kenya*. Nairobi: Capital Markets Authority.
- Cooper, D. R., & Schindler, P. S. (2006). *Business Research Methods* (9th ed.). New Delhi: Tata McGraw Hill Education.

- Danis, M. A., & Pennington-Cross, A. (2005). *The Delinquency of Subprime Mortgages*. St. Louis: Federal Reserve Bank of St. Louis.
- Ding, L., Quercia, R. G., Ratcliffe, J., & Lei, W. (2008). *Risky Borrowers or Risky Mortgages: Disaggregating Effects Using Propensity Score Models*. Chapel Hill: Center for Community Capital, University of North Carolina.
- English, W. B. (2002). Interest Rate Risk and Bank Net Interest Margins. *BIS Quarterly Review*, 67-82.
- Field, A. (2009). *Discovering Statistics Using SPSS*. London: Sage.
- Foote, C., Gerardi, K., & Willen, P. (2008). Negative Equity and Foreclosure: Theory and Evidence. *Journal of Urban Economics*, 6(2), 234-245.
- Jackson, J., & Kasserman, D. (1980). Default Risk on Home Mortgage Loans: A Test of Competing Hypotheses. *Journal of Risk and Insurance*, 3, 678-690.
- Kamenchu, I. J. (2013). Factors Leading to Slow Adoption of Derivatives Use in Kenya: A Case of Commercial Bank in Kenya. *International Journal of Economics and Finance*, 1(3), 1-14.
- Kau, J., Epperson, D., & Muller, W. (1985). Pricing Default Risk in Mortgages. *AREUEA*, 13(3), 152-167.
- Kelly, L., Brent, W., Lindsey-Taliefero, D., & Price, R. (2011). Default Mortgage Profile: Determinants of Mortgage Delinquency. *Journal of Business & Economics Research*, 9(2), 27-47.
- Keynes, J. M. (1965). *The General Theory of Employment, Interest, and Money*. Eastford: Martino Fine Books.
- Kidundi, O. D. (2010). *Profitability of Financing Low-Cost Housing in Kenya*. Vaanta, Finland: Unpublished Thesis: Laurea University of Applied Sciences.
- Kithinji, A. M. (2010). *Credit Risk Management and Profitability of Commercial Banks in Kenya*. University of Nairobi, School of Business, Nairobi.
- Kolapo, T. F., Ayeni, R. K., & Oke, M. O. (2012, May). Credit Risk and Commercial Banks' Performance in Nigeria: A Panel Model Approach. *Australian Journal of Business and Management Research*, 2(2), 31-38.
- Lambrecht, B., Perraudin, W., & Satchell, S. (1997). Time to Default in the UK Mortgage Market. *Economic Modelling*, 14, 485-499.
- Lawrence, E. C., & Smith, L. D. (1992). An Analysis of Default Risk in Mobile Home Credit. *Journal of Banking and Finance*, 16, 299-312.
- Li, W., & Ernst, K. (2007). Do State Predatory Lending Laws Work? A Panel Analysis of Market Reforms. *Housing Policy Debate*, 18(2), 347-391.
- Loh, L. C., & Tan, T. H. (2002). Asset Write-Offs – Managerial Incentives and Macroeconomics Factors. *ABACUS*, 38(1), 134-151.

- Luis, D.-S. (2004). *Income Volatility and Residential Mortgage Delinquency: Evidence from 12 EU Countries*. Bonn: Institute for the Study of Labor.
- Masese, P. B. (2011). *Factors affecting Credit Allocation in Financial Institutions in Kenya*. Eldoret: Moi University.
- Maveke, D. (2014). *Why Insurance is a critical aspect of your mortgage*. Retrieved June 10, 2014, from Housing Finance: <http://housing.co.ke/useful-mortgage-articles/229--why-insurance-is-a-critical-aspect-of-your-mortgage>
- Merton, R. C. (1990). The Financial System and Economic Performance. *Journal of Financial Services Research*, 263-300.
- Miller, M. J. (2000). *Graduate Research Methods: Reliability and Validity*. Tempe: Unpublished Graduate Notes: Western International University.
- Mugenda, O. M., & Mugenda, A. G. (2003). *Research Methods*. Nairobi: Acts Press.
- Nakhumwa, N. J. (2014). Adoption of E-commerce Payment Systems by Commercial Banks in Kenya. *International Journal of Management & Information Technology*, 9(2), 1600-1622.
- Ngacha, S. W. (2013). *The Effect of Interest Rate Volatility on Mortgage Default Rate in Kenya*. Nairobi: Unpublished MBA Project, University of Nairobi.
- Ngacha, S. W. (2013). *The Effect of Interest Rate Volatility on Mortgage Default Rate in Kenya*. Nairobi: Unpublished, University of Nairobi.
- Ng'etich, J. C., & Wanjau, K. (2011, April). The effects of Interest Rate Spread on the Level of Non - Performing Assets: A Case of Commercial Banks in Kenya. *International Journal of Business and Public Management*, 1(1), 58-65.
- Ngugi, R. W., & Kabubo, J. W. (1998). *Financial Sector Reforms and Interest Rate Liberalization: The Kenya Experience*. Nairobi: African Economic Research Consortium.
- Ochola, J. O. (2010). *A Survey of The Credit Risk Management Practices of Commercial Banks in Kenya*. Nairobi: University of Nairobi, School of Business.
- Olweny, T. (2011, April). Modelling Volatility of Short -Term Interest Rates in Kenya. *International Journal of Business and Social Science*, 2(7), 289-303.
- Pryce, G., & Keoghan, M. (2002). Unemployment Insurance for Mortgage Borrowers: Is it Viable and does it Cover those most in Need? *European Journal of Housing Policy*, 2(1), 87-114.
- Quartey, D. K. (2000). *The Policy Environment for Promoting Small and Medium Sized Enterprises in Ghana and Malawi*. Manchester: Institute for Development Policy and Management, University of Manchester.
- Reichenberger, A. (2011). *The Determinants of Mortgage Delinquency*. Manhattan, Kansas: Unpublished Thesis, Kansas State University.

- Rousseau, P. L., & Sylla, R. (2001). Financial Systems, Economic Growth, and Globalization. *Globalization in Historical Perspective* (pp. 373-416). Chicago: University of Chicago Press.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th ed.). Harlow, England: Prentice Hall.
- Schreiner, M., Graham, D. H., & Miranda, M. (1998). *Choices by Poor Households when the Interest Rate for Deposits differs from the Interest Rate for Loans*. Washington University in St. Louis.
- Southard, M. (2006). *Research Variables*. Orleans: Florida Schools.
- Stanton, R., & Wallace, N. (1999). Anatomy of an ARM: The Interest Rate-Risk of Adjustable-Rate Mortgages. *Journal of Real Estate and Finance and Economics*, 19, 49-67.
- Stiglitz, J. E., & Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *The American Economic Review*, Volume 71, Issue 3, 393-410.
- Tang, J. (2010). Exploratory and Confirmatory Factor Analysis of Epistemic Beliefs: Questionnaire about Mathematics for Chinese Junior Middle School Students. *Journal of Mathematics Education*, 3(2), 89-105.
- The World Bank. (2011). *Developing Kenya's Mortgage Market*. Washington DC: The World Bank.
- Vandell, K., & Thibodeau, T. (1985). Estimation of Mortgage Defaults using Disaggregate Loan History Data. *AREUEA*, 13(3), 292-316.
- Walley, S. (2011). *Developing Kenya's Mortgage Market*. Washington DC: The World Bank.
- Walliman, N. (2011). *Research Methods: The Basics*. London: Routledge.
- Webb, B. G. (1982). Borrower Risk Under Alternative Mortgage Instruments. *Journal of Finance*, 37, 169-183.
- Wicksell, K. (1954). *value, Capital and Rent*. Auburn, Alabama: Ludwig von Mises Institute.

APPENDIX 1

Letter of Transmittal

September, 2014

KCA University
School of Business and Research
Nairobi.

Dear Respondent,

RE: A STUDY ON DETERMINANTS OF MORTGAGE DELINQUENCY

This questionnaire is designed to carry out a survey of determinants of mortgage delinquency amongst commercial banks mortgagees in Kenya. This study aims to cover home or individual mortgage uptake and not commercial mortgages within Kenya. The information you provide will help in carrying out this survey and satisfying the objectives of the study guided by the following objectives:

- i. To determine the relationship between mortgage individual characteristics and mortgage delinquency amongst commercial banks in Kenya.
- ii. To evaluate the relationship between mortgage specific characteristics on mortgage delinquency amongst commercial banks mortgagees in Kenya.
- iii. To explore the role of mortgage characteristics on mortgage delinquency amongst commercial banks mortgagees in Kenya.

It is therefore to this end that we believe your input towards this study is paramount.

The study will be conducted as an academic research and all the information provided will be treated with utmost confidentiality. The study outcomes and report will not include reference to any individual (s).

To facilitate the completion of the study, could you kindly take some few minutes to complete the attached questionnaire and return it to the administrator.

In case of any questions, please do not hesitate to contact the undersigned on;

Tel: 0722 166 037

Email: estherwamalwa@yahoo.com

Thank you very much for your input and we appreciate the time you have spared to answer the questions.

Sincerely,

APPENDIX II

Questionnaire

INSTRUCTIONS

SECTION 1 - BACK GROUND INFORMATION

1. Age (tick one)

18-24 25-31 32-38 39-45
 > 46

2. How many years have you been in the banking industry?

0-5 6-10 11-15 >16

3. What is your highest academic qualification achieved (tick one or specify)

Diploma Degree
 Masters Others (specify)

SECTION II – MORTGAGEE SPECIFIC INFORMATION

4. Please tick the most appropriate option using the scale provided

1– Very Low Extent 2 – Low Extent, 3– Neutral 4 – Some Extent 5 – Great Extent

		1	2	3	4	5
1.	The Board Credit Committee is often involved in selecting mortgage applicants					
2.	Credit committee deploy bank rehabilitation process by calling clients to pay overdue mortgages					
3.	The interest rate charged on various types of mortgages cover the cost and meet good profit margin					
4.	The company’s lending policy is periodically reviewed to reflect the prevailing conditions					
5.	The lending authority/ mortgage approval is					

	decentralized					
6.	The institution utilizes information from reference bureaus in appraising the customer's mortgage					

5. Please tick the most appropriate option using the scale provided

1 – Very Low Extent 2 – Low Extent 3 – Neutral 4 – Some Extent 5 – High Extent

		1	2	3	4	5
1.	The Mortgage Credit Committee involvement in selecting mortgage applicants reduces the chances of mortgage delinquency					
2.	Credit Committee deployment of bank rehabilitation process of calling clients to pay overdue mortgages reduces mortgage delinquency					
3.	Mortgage Interest charged on various mortgages cover the cost and meet good profit margin and is reasonable to reduce mortgage delinquency					
4.	Periodical review of bank's lending mortgage policy reflects the prevailing conditions that reduce mortgage delinquency					
5.	Decentralization of Mortgage approval enhances mortgage delinquency					
6.	Incorporation of Credit bureaus information in mortgage appraisal reduces mortgage delinquency					
7.	To what extent do mortgagee specific characteristics lead to Mortgage delinquency?					

SECTION III – MORTGAGE SPECIFIC INFORMATION

6. Please tick the most appropriate option using the scale provided

1– Very Low Extent 2 – Low Extent, 3– Neutral 4 – Some Extent 5 – Great Extent

		1	2	3	4	5
1.	Adjustments of the interest rates, may disrupt the streams of income sending the mortgagor into					

	payment shock.					
2.	Lower interest rates improve “outreach” to more borrowers.					
3.	Investors usually buy mortgage-backed securities because they offer an attractive rate of return					
4.	Mortgage repayments slows down with government interference					
5.	Mortgagor credit risk rises with decline of collateral values.					
6.	Higher debt-to-income-ratios (DTIs) contribute to a higher probability of delinquency					
7.	Higher loan-to-value ratios (LTVs) contribute to a higher probability of delinquency.					

7. Please tick the most appropriate option using the scale provided

1 – Very Low Extent 2 – Low Extent 3 – Neutral 4 – Some Extent 5 – High Extent

		1	2	3	4	5
1.	Adjustments of interest rates which disrupts the streams of income sending the mortgagor into payment shock enhances mortgage delinquency					
2.	Outreach to more borrowers is improved by lower interest rates thus reducing mortgage delinquency					
3.	Mortgage backed securities are bought by investors because they offer an attractive rate of return which reduces mortgage delinquency					
4.	Government interference slows down mortgage repayments thus enhances mortgage delinquency					
5.	Decline of collateral values leads to a rise in mortgage credit risk that enhances mortgage delinquency					
6.	Higher debt-to-income ratios enhances mortgage delinquency					
7.	Higher loan-to-value ratios enhances mortgage delinquency					
8.	To what extent do mortgage specific information					

	lead to mortgage delinquency?					
--	-------------------------------	--	--	--	--	--

SECTION IV – MORTGAGOR SPECIFIC INFORMATION

8. Please tick the most appropriate option using the scale provided

1– Very Low Extent 2 – Low Extent, 3– Neutral 4 – Some Extent 5 – Great Extent

		1	2	3	4	5
1.	Volatility in household’s income is the variable that causes mortgage delinquency					
2.	Strategic borrowers choose to abandon their mortgage obligations despite being able to pay					
3.	Credit scores are negatively related to mortgage delinquency					
4.	Some trigger events such as bereavement, divorce, illness change one’s financial status leaving them unable to make their mortgage payments.					
5.	Banks lends to borrowers it does not have adequate knowledge about.					
6.	Households headed by minors are more likely to be delinquent					
7.	Borrowers may choose to be delinquent on a mortgage to address the cash flow problems resulting from higher number of dependants					

9. Please tick the most appropriate option using the scale provided

1 – Very Low Extent 2 – Low Extent 3 – Neutral 4 – Some Extent 5 – High Extent

		1	2	3	4	5
1.	Volatility in household’s income enhances mortgage delinquency					
2.	Abandonment of mortgage obligations despite being able to pay by strategic borrowers enhances mortgage delinquency					
3.	Credit scores enhances mortgage delinquency					

4.	Trigger events such as bereavement, divorce and illness change one's financial status that enhances mortgage delinquency					
5.	Borrower's whom the bank has inadequate information end up being given credit thus enhancing mortgage delinquency					
6.	Mortgage delinquency is higher in households headed by minors					
7.	Cash flow problems resulting from higher number of dependants of the borrowers enhances mortgage delinquency					
8	To what extent do mortgagor specific information lead to mortgage delinquency					

Thank you for your participation.

APPENDIX III

Table A1

Descriptive Analysis.

	N	Minimum	Maximum	Mean	Std. Deviation
Age	44	2.00	5.00	3.4773	.66433
Working Experience	44	1.00	4.00	2.5455	.69732
Level of Education	44	2.00	3.00	2.6818	.47116
Credit committee vetting	44	2.00	5.00	4.4318	.66114
Bank rehabilitation process used	44	4.00	5.00	4.3864	.49254
Interest rate sufficient	44	2.00	5.00	4.3182	.77077
Lower interest rates improve “outreach” to more borrowers.	44	2.00	5.00	4.4545	.66313
Mortgage-backed securities bought by investors	44	2.00	5.00	3.4318	.81833
Mortgage repayments slows down with government interference	44	2.00	5.00	3.6818	.80037
Mortgagor credit risk rises with decline of collateral values.	44	2.00	5.00	3.9773	.76215

Higher debt-to-income-ratios (DTIs) contribute to a higher probability of delinquency	44	3.00	5.00	4.1364	.73424
Higher loan-to-value ratios (LTVs) contribute to a higher probability of delinquency.	44	3.00	5.00	4.0909	.74141
Adjustments of interest rates which disrupts the streams of income sending the mortgagor into payment shock enhances mortgage delinquency	44	4.00	5.00	4.3636	.48661
Outreach to more borrowers is improved by lower interest rates thus reducing mortgage delinquency	44	2.00	5.00	4.2500	.71933
Mortgage backed securities are bought by investors because they offer an attractive rate of return which reduces mortgage delinquency	44	2.00	5.00	3.5455	.79107
Government interference slows down mortgage repayments thus enhances mortgage delinquency	44	2.00	5.00	3.6591	.91355

Some trigger events such as bereavement, divorce, illness change one's financial status leaving them unable to make their mortgage payments.	44	2.00	5.00	4.7273	.58523
Banks lends to borrowers it does not have adequate knowledge about	44	1.00	5.00	2.1818	1.01781
Households headed by minors are more likely to be delinquent	44	1.00	5.00	2.6136	1.24295
Borrowers may choose to be delinquent on a mortgage to address the cash flow problems resulting from higher number of defendants	44	2.00	5.00	3.5682	.99762
Volatility in household's income enhances mortgage delinquency	44	2.00	5.00	4.5682	.62497
Abandonment of mortgage obligations despite being able to pay by strategic borrowers enhances mortgage delinquency	44	2.00	5.00	4.0000	.94006
Credit scores enhances mortgage delinquency	44	2.00	5.00	4.1591	.80531

Trigger events such as bereavement, divorce and illness change one's financial status that enhances mortgage delinquency	44	2.00	5.00	4.5909	.62201
Borrower's whom the bank has inadequate information end up being given credit thus enhancing mortgage delinquency	44	1.00	5.00	3.1818	1.36863
Mortgage delinquency is higher in households headed by minors	44	1.00	5.00	2.9545	1.21912
Cash flow problems resulting from higher number of dependants of the borrowers enhances mortgage delinquency	44	2.00	5.00	3.7500	.81054
To what extent do mortgagor specific information lead to mortgage delinquency	44	1.00	5.00	3.8864	.99337
Overally, what is extent of mortgage delinquency in your bank?	44	1.00	5.00	2.2045	1.26821
Valid N (list wise)					

APPENDIX IV

Table B1

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.945
Bartlett's Test of Sphericity	Approx. Chi-Square	6543.313
	Df	703
	Sig.	0.000

APPENDIX V

Table C1

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.413	16.847	16.847	7.413	16.847	16.84	5.451	12.389	12.38
2	4.678	10.631	27.478	4.678	10.631	27.47	5.040	11.454	23.84
3	4.300	9.773	37.251	4.300	9.773	37.25	4.930	11.204	35.04
4	3.554	8.078	45.329	3.554	8.078	45.32	4.524	10.282	45.32
5	3.138	7.132	52.460						
6	2.217	5.039	57.499						
7	2.141	4.867	62.365						
8	2.000	4.545	66.911						
9	1.663	3.780	70.690						
10	1.516	3.445	74.135						
11	1.470	3.341	77.476						
12	1.146	2.605	80.081						
13	.929	2.111	82.192						
14	.907	2.061	84.252						
15	.854	1.941	86.193						
16	.751	1.706	87.900						
17	.711	1.616	89.516						
18	.581	1.320	90.836						
19	.539	1.224	92.060						
20	.445	1.012	93.072						
21	.414	.941	94.013						
22	.375	.853	94.866						
23	.348	.790	95.656						
24	.310	.704	96.360						
25	.259	.588	96.948						
26	.221	.501	97.450						
27	.216	.490	97.939						
28	.182	.414	98.353						
29	.146	.331	98.685						
30	.139	.317	99.002						
31	.101	.229	99.231						
32	.084	.192	99.422						

33	.061	.138	99.560
34	.055	.126	99.686
35	.053	.120	99.806
36	.025	.058	99.864
37	.021	.048	99.911
38	.017	.038	99.949
39	.013	.029	99.978
40	.006	.013	99.991
41	.003	.006	99.997
42	.001	.003	100.00 0
43	7.788E- 05	.000	100.00 0
44	##### #####	##### #	100.00 0

Extraction Method: Principal Component Analysis.

APPENDIX VI

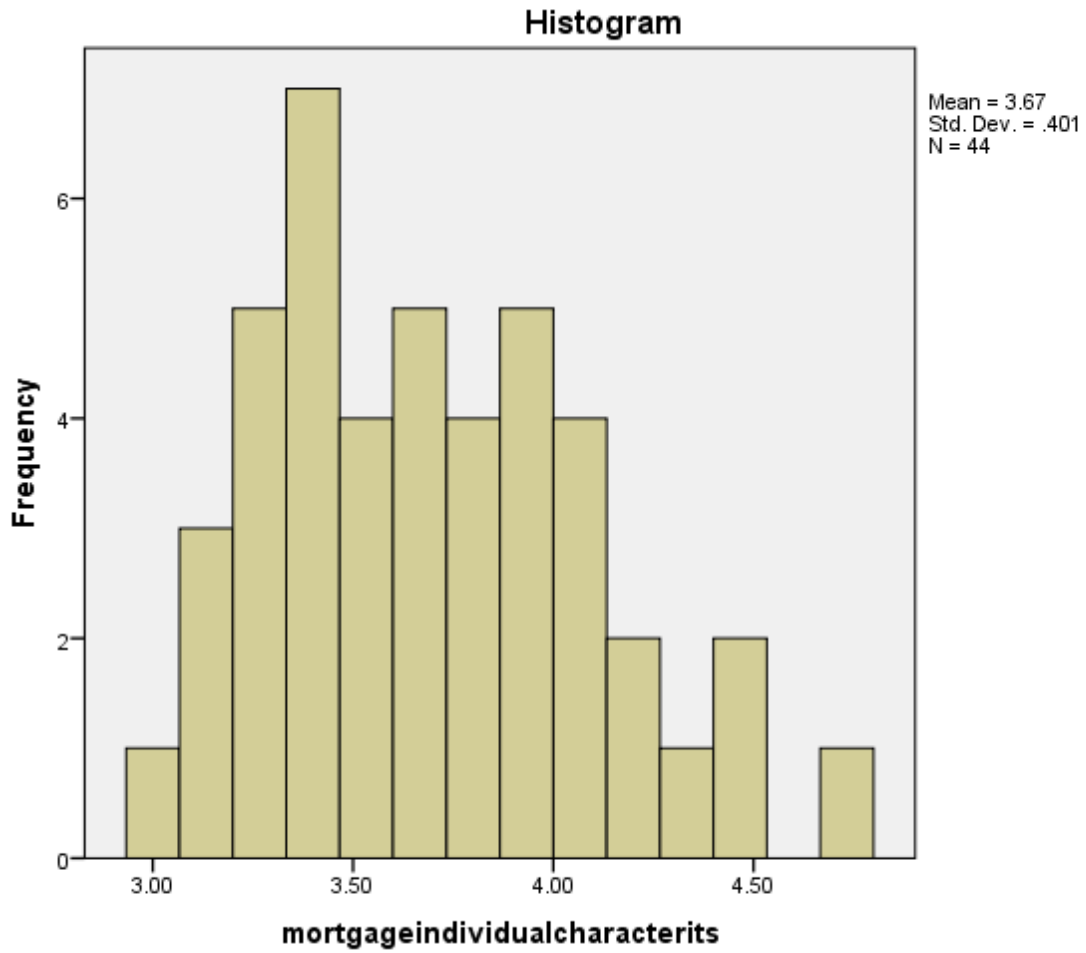
NORMALITY TEST OF MORTGAGE INDIVIDUAL CHARACTERISTIC

Frequency	Stem & Leaf
4.00	3. 0001
5.00	3. 22222
11.00	3. 444444445555
6.00	3. 666667
8.00	3. 88889999
4.00	4. 0000
3.00	4. 223
2.00	4. 44
1.00	4. 6

Stem width: 1.00
Each leaf: 1 case(s)

Figure A1

Mortgage individual characteristic Stem-and-Leaf Plot



APPENDIX VII

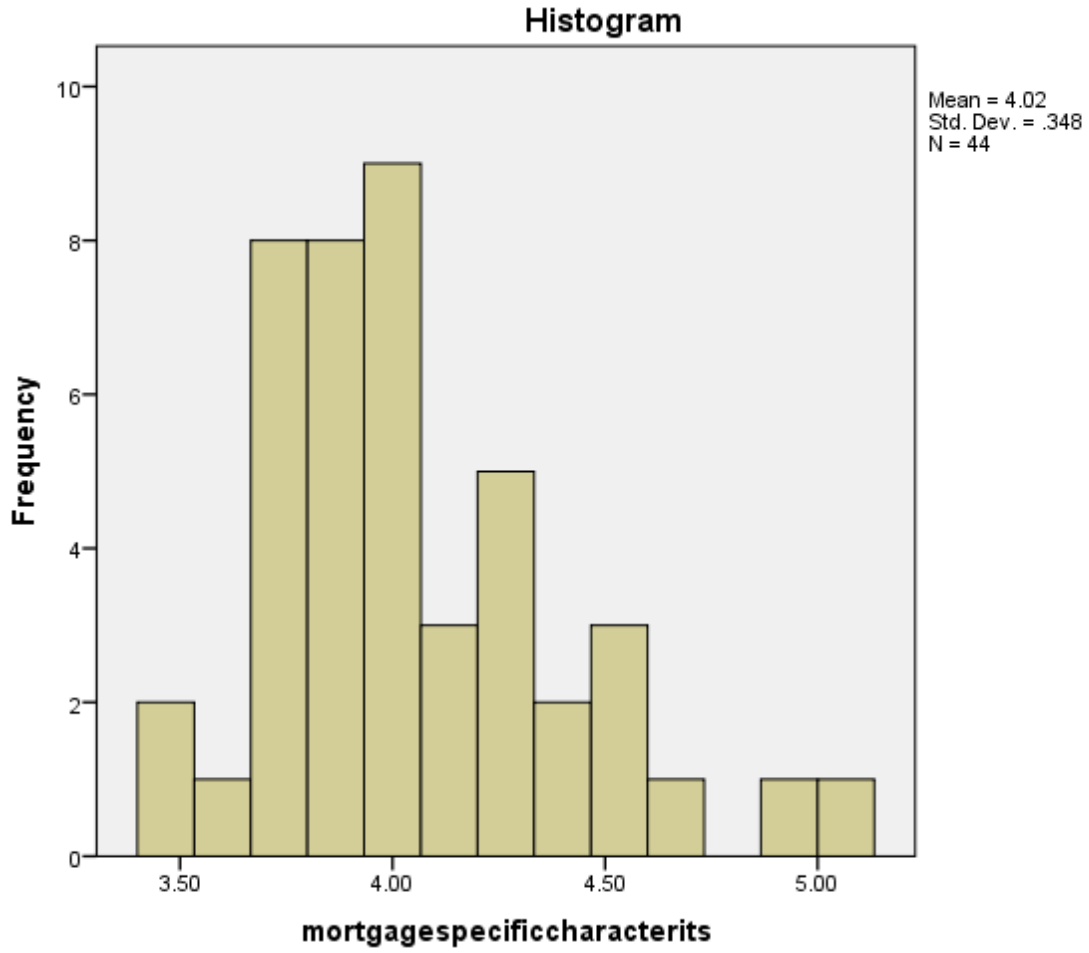
NORMALITY TEST OF MORTGAGE SPECIFIC CHARACTERISTIC

Frequency	Stem & Leaf
3.00	3. 445
8.00	3. 66677777
12.00	3. 888888889999
8.00	4. 00000011
5.00	4. 22222
5.00	4. 44455
1.00	4. 6
1.00	4. 8
1.00	Extremes (>=5.0)

Stem width: 1.00
Each leaf: 1 case(s)

Figure B1

Mortgage specific characteristic Stem-and-Leaf Plot



APPENDIX VIII

Normality test of Mortgage Characteristic

Frequency Stem & Leaf

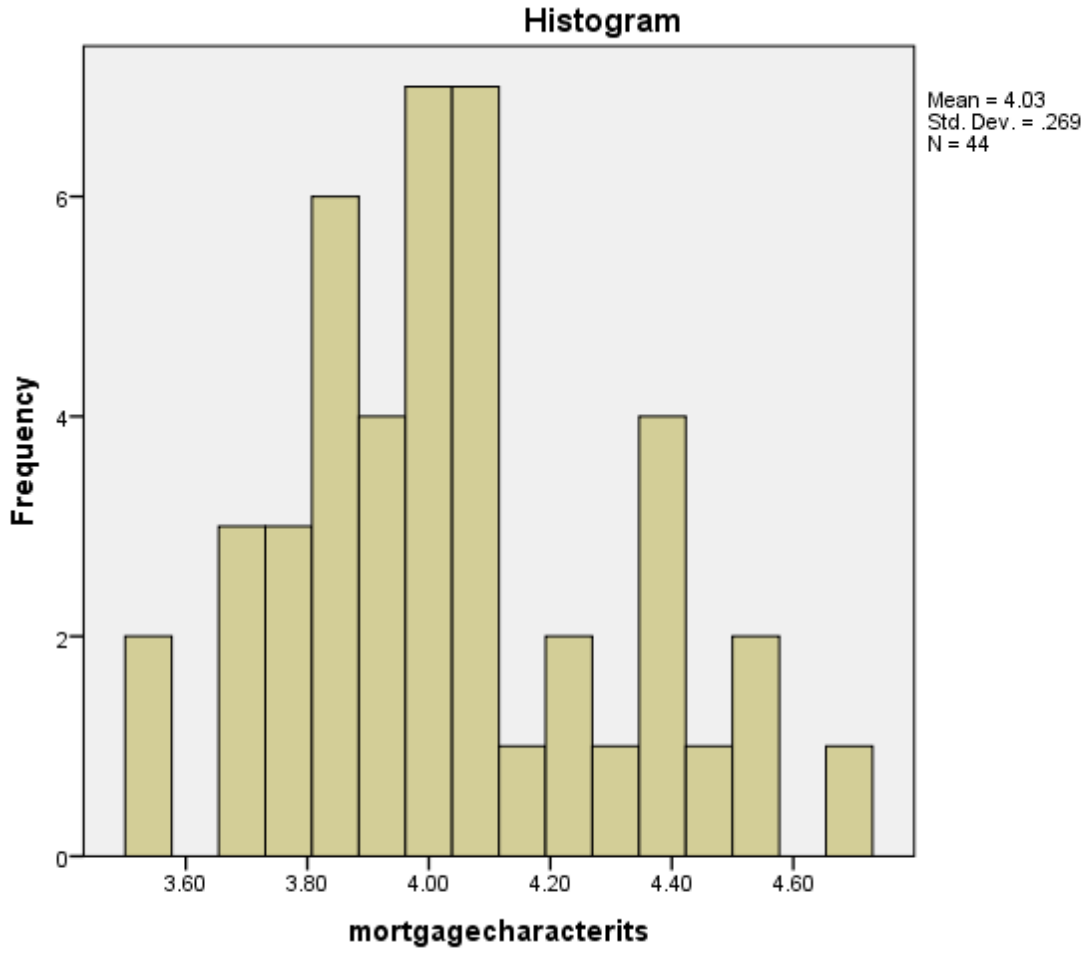
2.00	35. 33
3.00	36. 999
3.00	37. 666
6.00	38. 444444
4.00	39. 2222
14.00	40. 00000007777777
1.00	41. 5
2.00	42. 33
5.00	43. 08888
1.00	44. 6
2.00	45. 33
1.00	46. 9

Stem width: .10

Each leaf: 1 case(s)

Figure C1

Mortgage characteristic Stem-and-Leaf Plot



APPENDIX IX

Table D1

Correlations mortgage characteristic, mortgage specific characteristic and mortgage individual characteristic

		Mortgagechar acteristics	Mortgagespe cificcharacte ristics	Mortgageindi vidualcharact eristics
Mortgagecharacteristics	Pearson Correlation	1	.296	.326*
	Sig. (2-tailed)		.051	.031
	N	44	44	44
Mortgagespecificcharac teristics	Pearson Correlation	.296	1	.632**
	Sig. (2-tailed)	.051		.000
	N	44	44	44
Mortgageindividualcha racteristics	Pearson Correlation	.326*	.632**	1
	Sig. (2-tailed)	.031	.000	
	N	44	44	44

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

APPENDIX X

Table E1

Component pattern matrix

Variables	component				factor	Cronbach's
	1	2	3	4		
Higher debt-to-income-ratios (DTIs) contribute to a higher probability of delinquency	0.745				0.658	
Higher loan-to-value ratios (LTVs) contribute to a higher probability of delinquency.	0.656					
The company's lending policy is periodically reviewed to reflect the prevailing conditions	0.614					
Mortgagor credit risk rises with decline of collateral values.	0.563					
Incorporation of Credit bureaus information in mortgage appraisal reduces mortgage delinquency	0.542					
Government interference slows down mortgage repayments thus enhances mortgage delinquency	0.776					
Credit scores are negatively related to	0.736					

mortgage delinquency			
Strategic borrowers choose to abandon their mortgage obligations despite being able to pay	0.679		
Volatility in household's income is the variable that causes mortgage delinquency	0.607		
Credit committee deploy bank rehabilitation process by calling clients to pay overdue mortgages	0.513		0.634
Credit scores enhances mortgage delinquency	0.511		
Credit Committee deployment of bank rehabilitation process of calling clients to pay overdue mortgages reduces mortgage delinquency	0.502		
Trigger events such as bereavement, divorce and illness change one's financial status that enhances mortgage delinquency	0.675		
Volatility in household's income enhances mortgage delinquency	0.653		0.6012
Some trigger events such as bereavement, divorce, illness change one's financial status leaving them unable to make their	0.618		

mortgage payments. Cash flow problems resulting from higher number of dependants of the borrowers enhances mortgage delinquency	0.405		
To what extent do mortgagor specific information lead to mortgage delinquency	0.5		
Banks lends to borrowers it does not have adequate knowledge about	7		
Borrower's whom the bank has inadequate information end up being given credit thus enhancing mortgage delinquency	0.5		0.645
	3		

APPENDIX XI

Table F1

Path Diagram

Variable	min	max	skew	c.r.	kurtosis	c.r.
GA	1.000	5.000	1.202	3.254	.351	.476
E4	2.000	5.000	-2.706	-7.328	8.772	11.878
E6	1.000	5.000	.472	1.279	-1.085	-1.469
F1	2.000	5.000	-1.706	-4.619	4.192	5.676
F4	2.000	5.000	-1.815	-4.916	4.579	6.200
C6	3.000	5.000	-.214	-.579	-1.087	-1.472
C7	3.000	5.000	-.143	-.388	-1.131	-1.532
D6	2.000	5.000	-1.020	-2.761	1.131	1.531
D7	2.000	5.000	-.711	-1.925	.243	.329
A4	3.000	5.000	-.598	-1.620	-.601	-.814
A5	1.000	5.000	2.638	7.145	8.689	11.765
B2	3.000	5.000	.719	1.946	.234	.317
B3	2.000	5.000	-.728	-1.972	.429	.581
Multivariate					58.255	9.784