EFFECT OF MOBILE-BASED LENDING PROCESS ON NON-PERFORMING LOANS IN COMMERCIAL BANKS IN NAKURU TOWN, KENYA

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DECLARATION

This research project is my original work and has not been presented for the award of a degree in any other University.

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DEDICATION

I dedicate this research project to my dear family members; My Dad and late Mum, Joshua and Grace Murunga, My brothers and sisters, Rey, Maurice, Sylvia, Olivia and Brenda, My fiancé Regina, My sons, Clive and Jayden, and my nephews and nieces for all the support they gave me as I prepared and worked on this project.

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ABSTRACT

Lending is one of the most important functions of commercial banks. Yet, lending is at times associated with non-performing loans. Non-performing loans (NPLs) are a monumental challenge to the banking sector. The ratio of commercial bank NPLs to total gross loans was 5.989% in 2015 in Kenya. This study sought to determine the effect of mobile-based lending process on non-performing loans in commercial banks in Nakuru town. Precisely, the study assessed how loan appraisal process, documentation process, loan disbursement process, and monitoring and evaluation process affected NPLs in commercial banks. The study adopted a descriptive survey research design. The credit officers working with commercial banks in Kenya constituted the target population. The 172 credit officers working with 37 branches of commercial banks in Nakuru town when the study was done, comprised the accessible population. A sample of 64 credit officers was obtained from the study population using stratified random sampling method. A structured questionnaire was used to collect data from the sampled respondents. A pilot study was carried out prior to the main study with the aim of determining both the reliability and validity of the research instrument. The researcher obtained requisite permits and consents before collecting data. The Statistical Package for Social Sciences Version 24 software was used to facilitate data analysis. Descriptive statistics and inferential statistics were used in the analysis. Descriptive statistics encompassed frequencies, percentages, means and standard deviations. Inferential statistics took the form of Spearman rank correlation coefficient and multiple regression. The results of the analyses were presented in tables. The hypotheses were tested at 95% confidence level. The study observed that loan appraisal process was the most important element of mobile-based loans in respect of NPLs. On the other hand, loan disbursement process was found to be of marginal consequence on NPLs. The first ($t = 3.612$; $p < 0.05$) and second null hypotheses ($t = -3.278$; $p < 0.05$) were rejected while the third ($t = 0.096$; $p > 0.05$) and the fourth ($t = 0.027$; $p > 0.05$) failed to be rejected. The study also found that, the more commercial banks emphasized on lending through the mobile platform, the more they were likely to record NPLs.It was also concluded that the loan appraisal process had a significant relationship with NPLs.Conclusively, commercial banks risked to incur more NPLs for failing to get the necessary documentation of the borrowers. The study concluded that that the processes of disbursing loans, and monitoring and evaluation were largely inconsequential to NPLs in commercial banks. The study recommends that commercial banks should have a comprehensive process of appraising loans advanced via mobile platform in order to enhance the mechanisms of assessing creditworthiness of prospective borrowers. The study recommends that mobile-based loans should not be exempted from documentation rigours involved in loan application process. The study recommends that mobile-based loans should be disbursed via mobile phone only after authenticating the details of the applicants. The study further recommends that the mobile-based loans should be closely monitored and evaluated in order to ensure that repayment is in tandem with contractual agreement.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACCA: Association of Chartered Certified Accountants

BDP: Borrower's Documentation Process

CBI: Central Bank of Iraq

CBK: Central Bank of Kenya

CP: Collection Policy

CPA: Certified Public Accountant

CRBs: Credit Reference Bureaus

CRC: Credit Risk Control

CRM: Credit Risk Management

CTP: Credit Terms and Policy

IMF: International Monetary Fund

KCB: Kenya Commercial Bank

KNBS: Kenya National Bureau of Statistics

KPMG: Klynveld Peat Marwick Goerdeler

LAP: Loan Appraisal Process

LDP: Loan Disbursement Process

LP: Loan Performance

MEP: Monitoring and Evaluation Process

MFBs: Microfinance Banks

MFIs: Microfinance Institutions

NPLs: Non-Performing Loans

SPSS: Statistical Package for Social Sciences

VIF: Variance Inflated Factors

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DEFINITIONS OF TERMS

Loan Disbursement Process- This is the process in which the mobile lending process avails the funds requested to the borrower. This includes the duration taken until the loan is disbursed, whether the money is disbursed in the customer's mobile phone wallet or in his bank account, and whether the customer will be required to visit the bank to provide more information before they can access the approved mobile phone loan (Dolam&Collender, 2001).

Borrower' Documentation Process- This is where the mobile lending process requests the customer to provide additional information about themselves, their families, their sources of income and their location. This information is stored and can be retrieved by the bank in future to assist in loan recovery (Mills & McCarthy, 2014).

Loan Appraisal Process- This is where the mobile system analyses the potential borrower to determine whether they can qualify for a facility or not. Parameters which are considered include the customer's income levels, previous repayment record/history, amount requested and frequency of borrowing (Agu& Basil, 2013).

Mobile-based Lending: This refers to a form of lending that is done exclusively on mobile platform. This means the entire process of lending including loan application, appraisal and disbursement is affected on mobile phone (Hoover, 2016).

Monitoring and Evaluation Process- This is the process of observing how the loans disbursed on the mobile platform are performing both in terms of quantity (volume) and quality (repayment), and the ease of the process to a common "mwananchi". An evaluation report is then created concerning the whole mobile lending process and it can be used by the bank credit and IT analysts to improve the process (Olalere& Wan, 2016).

Non-performing loans: These are loans that have been advanced by a lending institution such as commercial banks but they have not been repaid for a period exceeding three months (Dolam&Collender, 2001).

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Lending is one of the most important functions of commercial banks (Agu& Basil, 2013). Lending by financial institutions is premised on various terms including amount of credit facility, lending rates, collateral requirements, purpose of credit, form of credit (secured or unsecured) among others. Every loan disbursed is associated with a certain degree of risk which is referred to as credit risk. Credit risk is describes as the probability of decrease in economic benefit occasioned by a monetary loss or an unexpected expense or loss resulting from a given transaction. This form of risk is measured by the percentage of non-performing loans against the total loans (Dolam&Collender, 2001).

1.1.1 Global Perspective of Mobile-Based LendingandNon-performing loans

In the United States, lending to small businesses, otherwise referred to as microcredit, has been in a crisis. The foregoing raised the question on whether there existed a credit gap relative to small business lending (Mills & McCarthy, 2014). One of the challenges facing this sector is the emergence of dynamic market of online lenders who are employing technology with the view of disrupting the small business lending market. Their comparatively small size notwithstanding, the online lenders are providing fast turnaround and online accessibility for borrowers. There are, moreover, using data to come up with more precise credit scoring algorithms. The new market entrants have realized that the small business lending has continued to shrink. The proportion of business loans was approximately 50% of the entire loan portfolio in 1995. However, this ratio has reduced to only about 30% as at 2012 (Mills & McCarthy, 2014).

According to Haneef, Riaz, Ramzan, Rana, Ishaq and Karim (2012), the risk management procedures and policies in Pakistani banking sector are still in their infancy. In view of this, the industry is advised to have a better understanding of risk management in order to effectively address the problem of loan recovery and also tighten their credit assessment scrutiny policy. Moreover, the banking sector in this country is advised to have appropriate monitoring procedure so that they are able to keep check of non-performing loans (NPLs). In the event that credit risk is not addressed, lending institutions are likely to be more prone to NPLs. Credit risk is described as the proportion of NPLs to total loans advanced to borrowers (Dolam&Collender, 2001).

1.1.2 Regional Perspective of Mobile-Based Lending and Non-performing loans

In Nigeria, lending is stated to be one of the primary functions of commercial banks (Agu& Basil, 2013). This is in spite of lending being associated with risk of default. Commercial banks always make provisions for both bad and doubtful debts every financial year. The foregoing sends bad message to current and prospective investors. The surest way for financial institutions to avoid bad debts and hence NPLs is failing to lend out any credit at all. But then, this is an unassailable challenge since the chief source of revenue for commercial banks is credit. This implies that, lending institutions have no alternative to advancing credit to their customers. However, this ought to be effected within sound credit management strategies in order to mitigate bad debts (Agu& Basil, 2013).

In an analysis of interest rates and loan portfolio performance in commercial banks in Uganda, effective monitoring and recovery of loans is aided by a computer system (Nakayiza, 2013). Loan committees for commercial banks in the country at branch level regularly hold recovery meetings. The agenda of these meetings is to review all loans which are in arrears. In support of recommendations by KPMG (2001), Nakayiza noted that banks are supposed to develop recovery strategies by factoring in the sector's dynamics. These dynamics are influenced by the banking industry environment and the position of the borrower within the sector, and also the borrower's financial condition.

1.1.3 Kenya's Perspective of Mobile-Based Lending and Non-performing loans

Figures by the Kenya National Bureau of Statistics (KNBS) indicate that mobile telephone capacity has been on unprecedented increase. In 2000, there were about 26 million mobile phones in circulation. This figure rose to 29 million in 2009, 46.6 million in 2012 to 47.4 million in 2011 (Republic of Kenya, 2012). These statistics underscores the great emphasis Kenyans have put on use of mobile phones. In Kenya, commercial banks and other lending institutions engage the services of credit reference bureaus (CRBs) to assess credit worthiness of prospective borrowers (Kimasar&Kwasira, 2014). However, it is not clear whether lending institutions seek credit information of CRBs when advancing microcredit to borrowers over mobile platform.

There are very interesting statistics regarding mobile lending in Kenya. This is attributed to the fact that Kenya is the pioneer of mobile money transfer in the world. The advent of the mobile money transfer popularly known as "M-Pesa" by the leading telecommunication firm in the country, Safaricom Limited, changed drastically financial transactions including mobile lending. Other telecommunication giants have followed the footsteps of Safaricom Limited and are now running their own mobile money transfer platforms. Lending institutions particularly commercial banks have been providing mobile services on the platforms of these telecommunication firms. Since the inception of mobile lending, commercial banks in Kenya have recorded tremendous growth in loan uptake. A case in point is the Kenya Commercial Bank (KCB) which recorded about 4 million new loans in 2015 compared to approximately 200,000 new loans it used to make per year there before. Majority of these borrowers at 94%applied for loans using their mobile phones (Hoover, 2016).

1.1.4 Banking Sector in Kenya

The banking sector is one of the most important financial sectors in the country. It is governed by both the Banking Act and Companies Act as stipulated in the Constitution. It plays a leading role in the socio-economic development of the nation. As noted by Shambe (2003), the sector is important since it executes monetary policies in addition to providing means for effecting payments for various goods and services. The main players in this sector are commercial banks which are financial entities that offer financial and other related services to their customers. The services provided by these institutions include savings, credit facilities, processing of cheques, insurance services (bancassurance), processing of salaries and other payments, among other services. In Kenya, there are 42 licensed commercial banks. These banks fall under three tiers based on their capitalization. All commercial banks are regulated by the Central Bank of Kenya. The requirements for lending are stipulated by the CBK. A total of 28 commercial banks had branches in Nakuru town by the time this study was conducted.

1.2 Statement of the Problem

Non-performing loans (NPLs) are a monumental challenge to the banking sector. According to the International Monetary Fund (IMF) statistics, the ratio of bank NPLs to total gross loans was 5.989% in 2015. Since 2003 when the aforesaid ratio stood at an all-time high of 34.9% the NPLs have consistently declined to an all-time low of 4.429% in 2011. However, the NPLs have been increasing ever since to 4.594% in 2012, 5.046% in 2013, 5.455% in 2014, and to 5.989% in 2015 (IMF, 2016). The foregoing implies that there are challenges that commercial banks have been experiencing since 2011 in their loan recovery plans and in addressing NPLs. This is further justified by the Central Bank of Kenya (CBK) bank supervision report for 2015, where it was indicated that the banking sector in Kenya recorded a decline in asset quality as a result of NPLs ratio increasing from 5.6% in December 2014 to 6.8% in December, 2015 (CBK, 2015).

Coincidentally, mobile-based lending in Kenya was incepted in 2012 with the introduction of the now-popular 'M-Shwari' concept. M-Shwari enables customers to have access to savings and credit products using their mobile phones. It is imperative to examine the nexus between increased NPLs and mobile lending given that the latter has hitherto hit billions of Kenya shillings. It is important to put in check the NPLs in order to ensure that the financial performance of commercial banks is not hugely affected particularly in the wake of the interest rate ceiling that was recently introduced by the Central Bank of Kenya (CBK, 2016). The present study, therefore,purposedtoexamine the effect of mobile-based lending process on non-performing loans among commercial banks.

1.3 Objectives of the Study

The study sought to address the following objectives.

1.3.1 General Objective

To determine the effect of mobile-based lending process on non-performing loansin commercial banks in Nakuru town, Kenya

1.3.2 Specific Objectives

i. To examine the effect of loan appraisal process on non-performing loans in commercial banks in Nakuru town
ii. To analyze how borrower'sdocumentation process affects non-performing loans in commercial banks in Nakuru town
iii. To assess the effect of loan disbursement process on non-performing loans in commercial banks in Nakuru town
iv. To establish the effect of monitoring and evaluation processonnon-performing loans in commercial banks in Nakuru town

1.4 Research Hypotheses

H_{01}: There is no significant effect of loan appraisal process on non-performing loans in commercial banks in Nakuru town.

H_{02}: There is no significant effect of borrower'sdocumentation process on non-performing loans in commercial banks in Nakuru town.

H_{03}: There is no significant effect of loan disbursement process on non-performing loans in commercial banks in Nakuru town.

H_{04}: There is no significant effect of monitoring and evaluation process on non-performing loans in commercial banks in Nakuru town.

1.5 Justification of the Study

The study is expected to go a long way in benefitting persons charged with formulation of policies and the workforce entrusted with implementation of relevant strategies in the banking sector. The findings of the study are hoped to enable policy makers in the banking sector to come up with sound policies that will effectively enable addressing of loan recovery issues particularly the credit facilities advanced through the mobile platform. The lessons learnt from this study will be important in enabling practitioners in the banking sector particularly credit officers to be able to effectively address NPLs occasioned by loans issued through mobile banking on behalf of their respective banks. The study is further anticipated to add to the body of knowledge especially in the field of finance. The persons in the academia will find the study important in their scholarly work and future research.

1.6 Scope of the Study

The study was conducted in Nakuru town, which is the fourth largest urban centre in Kenya. When this study was carried out, the town was home to 28 commercial banks and a total of 35 branches which made it a favourable area of study. The study focused on all credit officers working with these commercial banks given that they were believed to be the most privy staff on issues to do with mobile-based lending and non-performing loans in their respective banks. Moreover, the study addressed four predictor (independent) variables which characterize mobile-based lending process and included loan appraisal process, loan documentation process, loan disbursement process, and monitoring and evaluation process. The independent variables were examined in respect to non-performing loans as the dependent variable. The study was conducted over a period of approximately three months since it was a survey. It was allocated a budget of between Ksh 100,000 and Ksh 110, 0000.

1.7Limitations of the Study

The study faced several challenges particularly during the collection of data. Some of the sampled credit officers were reluctant to divulge information regarding their banks for fear of potential reprisals from their superiors. In addressing the foregoing challenge, the researcher sought the approval of the branch managers and heads of credit department of the participating commercial banks. In addition, the respondents were not expected to disclose their identity nor the names of the banks they were working with. This strategy boosted their confidence to participate in the study. Some of the banks were unwilling to allow their credit officers to take part in the study. In respect of the foregoing limitation, the researcher explained to the branch managers the importance of the study to the banks in addressing non-performing loans in the wake of increased mobile-based lending. Moreover, the researcher assured the participants that the study was going to be exclusively for academic purposes and that the findings were going to be shared with any interested bank.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews theories and empirical studies on lending and non-performing loans. Moreover, a conceptual framework that shows relationship between study variables. Lastly, the chapter outlines a summary of the reviewed studies and research gaps identified from the studies.

2.2 Theoretical Review

Theories of lending and non-performing loans are reviewed and discussed in this part. The asymmetric information theory, adverse selection theory, agency costs of free cash flow theory, and financial intermediation theory are reviewed and discussed in the context of mobile lending process and non-performing loans.

2.3.1 Asymmetric Information Theory

The theory of asymmetric information was put forward by Akerlof and Spence in 1970s (Akerlof, 1970; Spence, 1973). The theory states that there is often an imbalance of information between sellers and buyers (between lenders and borrowers). In this perspective, one party has more or better information that the other. The foregoing results in an imbalance of power in transactions. Information asymmetry can lead to moral hazard, adverse selection and information monopoly. It is asserted that information asymmetry can lead to misinforming and is also essential in every communication process.

In the context of mobile lending by commercial banks, it is very likely that the borrowers have greater and better information regarding commercial banks than the latter. This is a case of information asymmetry which is potentially detrimental to banks since they may fail to accurately appraise the creditworthiness of prospective borrowers on mobile platform. It is thus possible for commercial banks to lend out loans to customers on mobile platform with high degree of defaulting.

2.3.2Adverse Selection Theory

The theory of adverse selection was proposed byAkerlof in 1970. The theory is premised on the observation that it can be bad news when an offer is accepted. The theory states that adverse selection occurs when the seller lacks information regarding the buyer. It is opined that in respect to addressing the foregoing challenges, a firm should adjust the price in order to manage the tradeoff between sales and adverse selection. It is thus true to state that adverse selection if linked to information asymmetry. Due to this kind of information, the choice of the price limits the benefits to one party in a transaction.

Adverse selection theory can be employed to explain the documentation process in mobile lending among commercial banks. The challenges associated with mobile lending relative to credit information of the borrowers may lead to adverse selection. The bank may make wrong credit documentation of the borrower which may be detrimental to either the bank or the borrower. Adverse information may lead to the bank failing to lend out the applied credit or lend the same at a high interest rate in order to caution any against credit risk. On the other hand, the borrower may miss out on the credit from the bank due to wrong documentation of their credit history.

2.3.3Agency Costs of Free Cash Flow Theory

The agency costs of free cash flow theory was proposed by Jensen in 1986. The theory is an advancement of the agency theory by Jensen and Meckling (2001). The theory states that free cash flow (FCF) describes the cash flow in excess of that required to fund all projects that have positive net present values when discounted at the relevant cost of capital (Jensen, 1986). According to Shrieves and Wachovicz (2001), free cash flow describes the sum of the cash flow to equity and cash flow to debt holders after interest-tax-shield.

The free cash flow theory holds that when dividends are replaced with debts, managers of a firm are likely to be obliged to transfer excessive cash flows to investors and as such limit the allocation of resources to low-return projects (Miller, 2001). The theory justifies substitution of debt for equity. The theory also emphasizes on the provision of additional benefits to reduce the agency costs of a firm and reallocation of resources. The free cash flow theory can be used to illustrate how commercial banks can disburse loans to borrowers who stand lower chances of defaulting in loan repayment. It can also be used to demonstrate the essence of avoiding high risk borrowers.

2.3.4Financial Intermediation Theory

The theory of financial intermediation was proposed by Akerlof in 1970. Other contributors to the tenets of this theory include Spence in 1973 and Rothschild and Stigliz in 1976. The financial intermediation theory holds that financial intermediaries do exist since they are able to reduce information and transaction costs that are occasioned by information asymmetry between borrowers and lenders. In this sense, therefore, financial intermediaries enable there being of an efficiently functioning market. Moreover, the theory indicates that all factors that affect the amount of credit channeled through financial intermediaries are likely to have macroeconomic effects.

The theory of financial intermediation is premised on two major foundations. The first one explains the importance of financial intermediaries in provision of liquidity to financial institutions. The second one demonstrates the ability of financial intermediaries to transform the risk characteristics of assets. The foregoing two premises have the potential to minimize the cost of channeling funds between borrowers and lenders, thus resulting in more efficient allocation of resources. It is stated that financial intermediaries' ability to transform the risk characteristics of assets enables them to circumvent a market failure and as such address information asymmetry problem (Kautohutohu, 2003).

Information asymmetry is occasioned by borrowers having more information about their investment projects compared to lenders. Information asymmetry can occur either ex ante or ex post. Ex ante information asymmetry is witnessed when lenders are unable to distinguish between borrowers with different credit risks prior to advancing loans; a situation that leads to adverse selection problem. Ex post information asymmetry occurs when only borrowers, but not lenders, are able to observe actual returns after project completion. This results in moral hazard problem. Moral hazard is said to occur when a borrower engages in activities that are likely to result in default in loan repayment. The financial intermediation theory can be employed to explain how the challenge that commercial banks encounter in assessing the creditworthiness of borrowers on mobile platform can result in adverse selection (Kautohutohu, 2003). The moral hazard part of the financial intermediation theory can be used to demonstrate the difficulties of banks to monitor how the funds borrowed on mobile platform is utilized which may lead to a likelihood of default in loan repayment, hence increased non-performing loans.

2.3 Empirical Review

In this section, empirical studies on lending and especially mobile-based lending process are reviewed. In particular, the review focuses on loan appraisal process, documentation process, disbursement process, and monitoring and evaluation process in line with non-performing loans.

2.3.1 Loan Appraisal Process and Non-Performing Loans

An empirical study by Amit and Krishnamay (2009) examined appraisal of a rural co-operative with the thrust on rural development. The study relied on both primary and secondary data on loan appraisal. However, the study did not divulge much information relative to loan appraisal system. In the same vein,Niaz and Azimun (2015) studied credit risk grading model and loan performance of commercial banks in Bangladesh. The study noted that as a result of rising number of non-performing loans and competition in the banking sector, majority of commercial banks have strongly focused on credit risk assessment, the initial stage is the loan appraisal process. It was acknowledged that indeed bankers preferred sophisticated financial techniques in credit appraisal process with the object of assessing both the borrower's business and financial position.

In Pakistani, Sufi and Qaisar (2015) conducted a study on credit risk management (CRM) and loan performance. The study was interested in microfinance banks (MFBs) in the country. The primary aim of the study was to investigate how credit risk management practices influence performance of loans. The dimensions of CRM practices considered in the study included credit terms and policy (CTP), client appraisal, collection policy (CP), and also credit risk control (CRC). The results of the study revealed that both credit terms and client appraisal impacted significantly on the loan performance (LP). This implies that credit appraisal is one of the major aspects that lending institutions ought to factor in order to enhance the performance of loans.

A study conducted in Nigeria empirically investigated effects of credit risk on profitability of commercial banks (Olalere& Wan, 2016). The study involved a total of 8 commercial banks where data for the period between 2011 and 2014 was employed. While citing the results of an earlier study by Sanusi (2012) on banking reform and their impact on the Nigerian economy, the study noted that the increased number of commercial banks has overstretched their existing workforce capacity. The foregoing has resulted in numerous challenges including poor credit appraisal system, financial crimes among others; factors that have increased the number of banks in financial distress.

A study by Mureithi (2010) indicated that loan appraisal is conducted for different reasons. These include the use of appraisal as a selection tool, to quantify risk, to assist in decision making, and also to ensure that there is good quality business with excellent credit worthiness. The foregoing underpins the importance of credit appraisal process among lending institutions which include commercial banks. The process was found to be also important in addressing non-performing loans which are occasioned by lengthy litigation process, unprofessional credit risk evaluation, moral hazard on the part of management, poor and unprofessional credit risk assessment, lack of sufficient supervisions of activities and projects, and also intentional default, and also valuation of credit appraisal model.

Moreover, Moti, Masinde, Mugenda and Sindani (2012) carried out an investigation into effectiveness of credit management system on loan performance. The study was delimited to microfinance sector in Kenya. The study revealed that the ability to intelligently and efficiently manage customer credit lines is a crucial requirement for effective credit management. It was further found that the existence of an ineffective and inefficient loan appraisal process is one of the primary causes of NPLs among lending institutions. A lending institution is supposed to address the challenges presented by NPLs by having greater insight into borrowers' financial strength, credit score history and changing payment patterns (Moti et al., 2012).

2.3.2 Borrower Documentation Process and Non-Performing Loans

An investigation on the state of small business lending was conducted by Mills and McCarthy (2014). The study was carried out in the United States. It examined access to credit and recovery and how technology may change the game. The study observed that small banks and community lenders had greater success when they relied on more conservative underwriting including having experienced bankers, review extensive documentation on sales, cash flow and collateral considerations of borrowers. The study also noted that in the US, there is weak securitized loan market. The foregoing scenario is supported by the postulation that unless underwriting standards and documentation for loans become more uniform and information for estimating the risk of loss more available, markets for securitized small business loans was bound to remain small. Small business loans have failed to be securitized as a result of lack of standardized documentation and data on their financial performance.

A study by Wondimagegnehu (2012) examined the determinants of non-performing loans. The study focused on commercial banks in Ethiopia. The study targeted both state-owned and private commercial banks. In the study it has been indicated that credit approval follows a number of considerations. This is premised on the assertion that advancing credit should carefully balance limiting of risks and maximizing profits while at the same time maintaining a competitive edge over rival entities. Credit approval entails determination of whether or not credit should be advanced to a given borrower. This process involves gathering relevant information and also determining the credit worthiness of the prospective borrower. Documentation process is postulated to be important. This is despite presenting a hard choice to the lending firm to either advance or refuse to advance credit. Documentation is found to be crucial during the legal follow-up done by the lending institution. The legal follow-up consists of obtaining proper documentation and keeping relevant documents alive.

In Tunisia, Ibtissem and Bouri (2013) carried out a study on credit risk management in microfinance. In the study, it is noted that documentation is conducted prior to advancing credit to borrowers. There are different documents that lending institutions demand in order to facilitate the loan processing. These documents are used as collateral to secure the credit facility being advanced. When citing Babu and Singh (2007), it is stated that a lending institution may accept a borrower's degree certificate, driver's license, marriage certificate and other documents that may serve as substitutes for collateral in individual lending. In spite of the importance of documents in indicating risk levels of firms, it is observed that small enterprises which are targeted by micro-lending are less likely to have documentation such as balance sheets and detailed business records.

A study by Essendi (2013) looked into the effect of credit risk management on loans portfolio among Saccos in Kenya. The study involved 106 Saccos drawn from Nairobi County. The study revealed that the existing credit policy of a Sacco is the primary document which is employed to formulate credit policy. The study further indicated that reduction of bad loans has immense benefits particularly to lending institutions. Moreover, it was noted that a sound credit risk management system facilitates identification of potential risks related to loan restructuring, underwriting and documentation. In addition, it was established that credit restructuring ought to be fully documented and recorded.

2.3.3Loan Disbursement Process and Non-Performing Loans

A study commissioned by the Central Bank of Iraq (CBI, 2006) examined the credit process. According to the study, the credit process begins with an extensive analysis of the creditworthiness of the borrower or the capacity and willingness of the borrower to repay the credit facility. The study further indicated that loan disbursement should be effected upon signing and delivering of requisite documents to the bank. These documents serve as the primary protection for banks once the loan has been disbursed. Prior to loan disbursement, a loan agreement, which is a legal document binding both parties, must be signed by both the bank representatives and the borrower. Once the credit facilities have been disbursed to borrowers, the monitoring process begins in order to ensure that the banking institution does not suffer from non-performing loans.

Relative to loan disbursement process, Agu and Basil (2013) examined credit management and bad debt in commercial banks and their implication on development. The study was done in Nigeria. The study relied on both primary and secondary data to unearth the possible causes for bad debts or non-performing loans. The data collected span from 1993 to 2011. The study acknowledged that credit management is integral to lending which implies that failure to its adherence is bound to convert good loans to bad. In this respect, therefore, corporate credit appraisal, disbursement process, monitoring and repayment must be adequately effected in order to ensure the success of commercial banks and other lending institutions.

A study by Ibtissem and Bouri (2013) assessed credit risk management in microfinance in Tunisia. In the study, it is indicated that in the microfinance sector, the repayment of loans commences almost immediately upon disbursement and then occurs on a weekly or monthly basis. The study further observed that loan disbursements have been on an upward trend and administrative cost per loan disbursed has been on a decline. This could have been attributed to the usefulness of credit scoring. It is stated that credit scoring model automates the credit decision process including loan disbursement process, which replaces manual loan decision. Ultimately, this results in reduction of administrative costs.

Locally, Bichanga and Aseyo (2013) conducted a study on the causes of loan default. The study examined microfinance institutions in Kenya specifically in Trans-Nzoia County. The study involved borrowers and MFIs from the indicated region. In the study, it has been observed that one of the factors that result in loan repayment default is delays by banks to process and disburse loans. The study further found that in the case of MFIs repayment of loans ordinarily start one to two weeks after loan disbursement.

2.3.4Monitoring and Evaluation Process and Non-Performing Loans

A study by Haneef et al (2012) sought to analyze the impact of risk management on non-performing loans and profitability of the banking sector in Pakistan. The study focused on five commercial banks. The study used secondary data exclusively. The study revealed that commercial banks in Pakistan lacked proper risk management mechanism. This led to the inference that NPLs are increasing as a result of lack of risk management which has ultimately resulted in threats to profitability of the banking sector. The nascent stage of risk management procedures and policies in the country necessitate arranging for effective monitoring procedure in order to keep NPLs in check. Monitoring is further underscored by the assertion that poor risk management implies that there exists weak monitoringmechanisms for credit quality of customers which has a likelihood of resulting in huge capital losses.

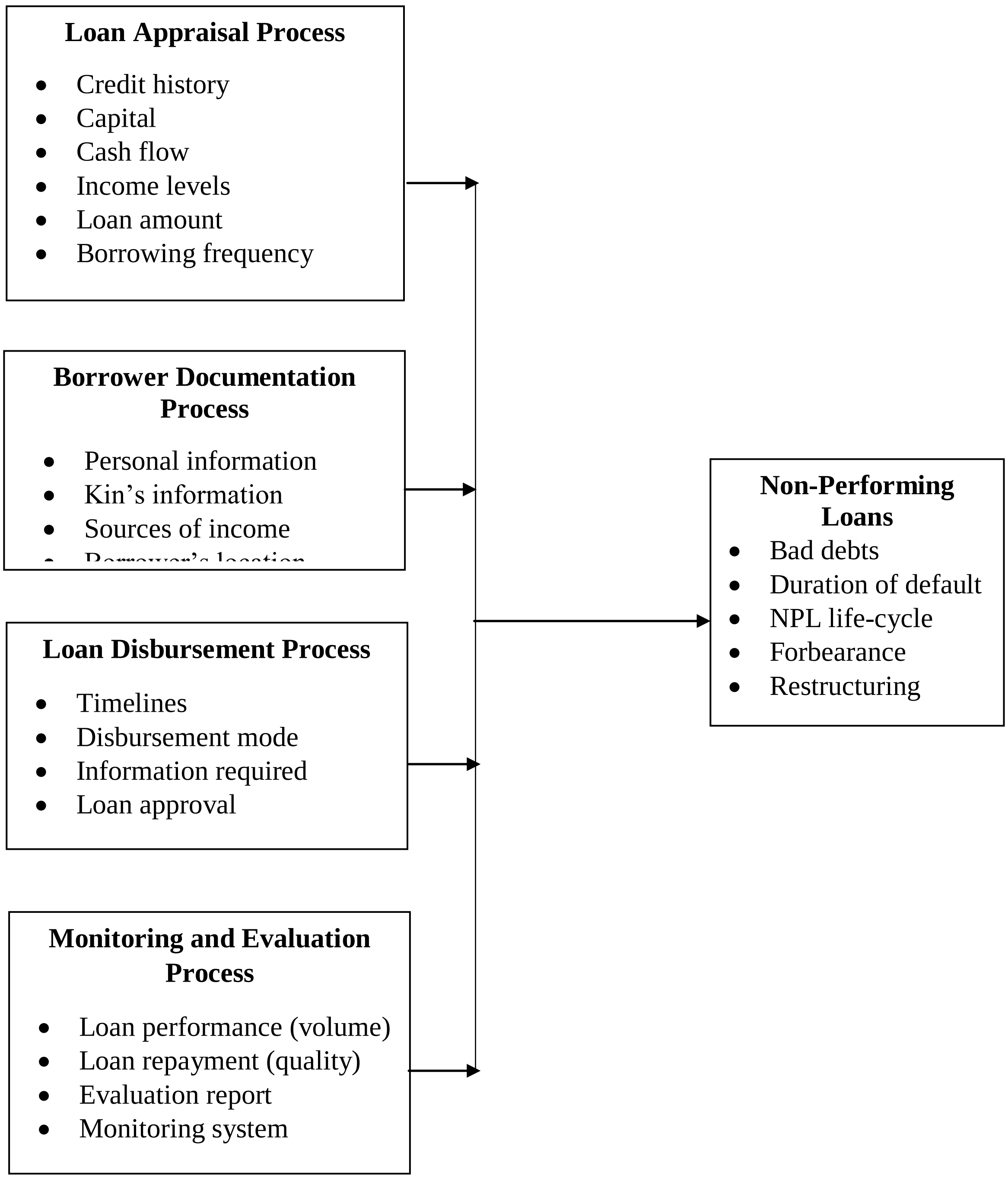
An empirical study by Olalere and Wan (2016) examined how credit risk affects performance of commercial banks. The study was conducted in Nigeria among 8 commercial banks. In the study, it is asserted that the ability of a bank to monitor risks influences its profitability. The study further indicated that banking institutions are supposed to focus on effective management of financial risks. Effectively monitoring and management of financial risks can prove the difference between success and survival of lending institutions. This is due to the prevailing dynamic banking environment where there is stiff competition, volatile economic conditions and rising default rates.

A study conducted by Nakayiza(2013) examined interest rates and loan portfolio performance in commercial banks. The study was delimited to the Centenary Bank in Uganda. The study sought to establish how the bank had ensured that its loan portfolio was maintained within acceptable limits. In the study, it is postulated that effective and good loan portfolio managers have focused most of their efforts on appraising loan prudently and also carefully monitoring the performance of advanced loans. Adoption of computerized system has facilitated more effective monitoring and recovery of loans. The daily, weekly and monthly reports generated by the system are employed for monitoring and control of arrears rate.

An empirical study by Moti et al (2012) analyzed the effectiveness of credit management system on loan performance. The study focused on the microfinance sector in Kenya. The study admitted that microfinance institutions (MFIs) in Kenya witness high levels of non-performing loans. This has curtailed their viability and financial sustainability. It was revealed that 100% of the surveyed MFIs had arrear monitoring systems in place. These systems ensure that there are effective loan collection policies. The foregoing findings indicated that in spite of there being arrear monitoring systems among MFIs, these institutions continued to suffer from huge NPLs. Impliedly, these systems are either ineffective to curtail NPLs or they are not fully implemented or both.

2.4 Conceptual Framework

A conceptual framework is an illustration that shows how constructs of a study are perceived to relate to each other as shown in Figure 2.1. The framework depicts two major sets of variables. These are independent variables which include loan appraisal process, documentation process, disbursement process, and monitoring and evaluation process. The other is the dependent variable which is non-performing loans. The mentioned independent variables describe the mobile lending process. Each of the aforestated variables is characterized by various indicators. It is held that the four indicated independent variables presumptively influence non-performing loans. It is on the foregoing hypothesis that this study is being conducted.



Independent Variables **Dependent Variable**

Figure 2.1: Conceptual Framework

2.5 Summary of the Reviewed Studies

The studies reviewednoted that as a result of rising number of non-performing loans and competition in the banking sector, majority of commercial banks have strongly focused on credit risk assessment. Bankers preferred sophisticated financial techniques in credit appraisal process with the object of assessing both the borrower's business and financial position. It is revealed that both credit terms and client appraisal impacted significantly on the loan performance. It is indicated that loan appraisal is conducted for different reasons including the use of appraisal as a selection tool, to quantify risk, to assist in decision making, and also to ensure that there is good quality business with excellent credit worthiness. The credit appraisal process was found to be also important in addressing non-performing loans. It was further found that the existence of an ineffective and inefficient loan appraisal process is one of the primary causes of NPLs among lending institutions.

The reviewed studies observed that small banks and community lenders had greater success when they relied on more conservative underwriting including having experienced bankers, review extensive documentation on sales, cash flow and collateral considerations of borrowers. Documentation is found to be crucial during the legal follow-up done by the lending institution. The legal follow-up consists of obtaining proper documentation and keeping relevant documents alive. There are different documents that lending institutions demand in order to facilitate the loan processing. These documents are used as collateral to secure the credit facility being advanced. It has been established that credit restructuring ought to be fully documented and recorded.

It has been indicated that loan disbursement should be effected upon signing and delivering of requisite documents to the bank. Prior to loan disbursement, a loan agreement must be signed by both the bank representatives and the borrower. Once the credit facilities have been disbursed to borrowers, the monitoring process begins. It is indicated that in the microfinance sector, the repayment of loans commences almost immediately upon disbursement. Moreover, it has been observed that one of the factors that result in loan repayment default is delays by banks to process and disburse loans.

The nascent stage of risk management procedures and policies necessitates arranging for effective monitoring procedure in order to keep NPLs in check. Monitoring is further underscored by the assertion that poor risk management implies that there exist weak monitoring mechanisms for credit quality of customers which has a likelihood of resulting in huge capital losses. It is asserted that the ability of a bank to monitor risks influences its profitability. Effective monitoring and management of financial risks can prove the difference between success and survival of lending institutions. It is postulated that effective and good loan portfolio managers have focused most of their efforts on appraising loan prudently and also carefully monitoring the performance of advanced loans. Findings of the reviewed studies indicated that in spite of there being arrear monitoring systems among MFIs, these institutions continued to suffer from huge NPLs.

2.6 Research Gaps

The research gaps are relative to local empirical studies that have hitherto been conducted in regard to mobile lending and non-performing loans. A study by Mureithi (2010) indicated that loan appraisal is conducted for different reasons which include the use of appraisal as a selection tool, to quantify risk, to assist in decision making, and also to ensure that there is good quality business with excellent credit worthiness. Moti et al (2012), on the other hand, examined effectiveness of credit management system on loan performance. The study found that the existence of an ineffective and inefficient loan appraisal process is one of the primary causes of NPLs among lending institutions. However, none of these two studies addressed the subject of mobile-based lending.

A study by Essendi (2013) looked into the effect of credit risk management on loans portfolio among Saccos in Kenya. The study revealed that the existing credit policy of a Sacco is the primary document which is employed to formulate credit policy. The foregoing study failed to critically examine the documentation process as part of lending process. Moreover, the study did not link documentation process to NPLs. Bichanga and Aseyo (2013) conducted a study on the causes of loan default. The study observed that one of the factors that result in loan repayment default is delays by banks to process and disburse loans. Nonetheless, the study failed to specifically address loan disbursement process.

In addition, Moti et al (2012) analyzed the effectiveness of credit management system on loan performance. The study revealed that 100% of the surveyed MFIs had arrear monitoring systems in place. The foregoing findings indicated that in spite of there being arrear monitoring systems among MFIs, these institutions continued to suffer from huge NPLs. This study, however, was done amongst MFIs as opposed to commercial banks. More so, it did not look into monitoring and evaluation process particularly in regard to both mobile-based lending and NPLs. The foregoing identified research gaps will be addressed in this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the research design, population, sampling procedure, research instrument, pilot testing, data collection procedure and data processing and analysis. The chapter also states how the results of the analysis were presented.

3.2 Research Design

A research design is defined as the blueprint of conducting a research study. In other words, it is the conceptual structure within which a research is carried out (Kothari, 2008). According to Orodho (2003), research design refers to the plan that is employed to generate answers to a research problem. This study adopted a descriptive survey research design. Descriptive survey is described as a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Orodho, 2003).

3.3 Target Population

The target population describes subjects or individuals who share similar character traits. It is the population to which the study findings are generalized (Kombo& Tromp, 2010). In the context of the present study the credit officers working with commercial banks in Kenya constituted the target population. The study population is a subset of the target population and refers to the population that the researcher can reasonably access. The 172 credit officers who were working with 28 commercial banks in Nakuru town by the time the study was being conducted comprised the accessible (study) population. The sampling frame which outlines the distribution of the credit officers across the commercial banks in Nakuru town is as shown in Table 3.1.

Table 3.1: Sampling Frame

	Commercial Banks	Branches	Credit Officers
1.	African Banking Corporation	1	2
2.	Bank of Africa Kenya Limited	1	3
3.	Bank of Baroda (K) Limited	1	2
4.	Barclays Bank of Kenya Limited	2	4
5.	CfCStanbic Bank Limited	1	3
6.	Chase Bank (K) Limited	1	7
7.	Commercial Bank of Africa Limited	1	2
8.	Consolidated Bank of Kenya Limited	1	5
9.	Co-operative Bank of Kenya Limited	2	11
10.	DTB	1	3
11.	Ecobank Kenya	1	2
12.	Spire Bank	1	2
13.	Equity Bank Kenya Limited	3	38
14.	Family Bank Limited	2	21
15.	Fina/Guaranty Trust (GT) Bank Limited	1	2
16.	First Community Bank Limited	1	2
17.	Guardian Bank Limited	1	3
18.	Jamii Bora Bank Limited	1	8
19.	KCB	3	15
20.	NBK	1	3
21.	NIC Bank	1	5
22.	Oriental Commercial Bank Limited	1	3
23.	Paramount Bank Limited	1	3
24.	Post Bank	1	2
25.	Prime Bank Limited	1	4
26.	Sidian Bank Limited	1	5
27.	Stanchart Bank	1	8
28.	Trans-National Bank Limited	1	4
	Total	**35**	**172**

Source: CBK (2017)

3.4 Sample Size and Sampling Technique

A sample refers to a subset of the accessible population. On the other hand, sampling is defined as the procedure employed to gather people, places or things to study (Kombo& Tromp, 2010). It is the process of selecting a number of individuals from a population such that the selected group contains elements representative of the characteristics found in the entire group (Orodho&Kombo, 2002). The Nassiuma's (2008) formula was used to calculate the size of the sample as shown.

$$n = \frac{NC^2}{C^2 + (N-1)\,e^2}$$

Where:

n	represents	Sample Size
N	represents	Target Population
C	represents	Coefficient of Variation ($21\% \leq C \leq 30\%$),
e	represents	Precision Level ($2\% \leq e \leq 5\%$)

Therefore; $$n = \frac{172 \times 0.25^2}{0.25^2 + (172-1)\,0.025^2}$$

$n = 63.47$

$n =$ 64credit officers

Stratified random sampling method was employed to obtain the sampled respondents from the study population. This sampling method was chosen due to the fact that it reduces bias by ensuring that there is fair and equitable distribution of respondents (Kothari, 2004) across all strata (35 bank branches).

3.5 Research Instrument

A structured questionnaire was used to collect data from the sampled respondents. According to Mugenda and Mugenda (2009), questionnaires are the most appropriate tools for collecting data in survey studies. The questionnaire was structured in such a way that it facilitated collection of data pertinent to the study objectives. More so, the questionnaire enabled collection of data on a 5-point Likert scale.

3.6 Data Collection Procedure

The researcher obtained the requisite permits and consents before collecting data. First, an official letter of introduction was obtained from the university. This was followed by obtaining the consent of the management of the commercial banks in Nakuru town. The research questionnaire was then issued to the sampled respondents through the heads of credit department of the respective bank branches. The respondents were allowed approximately five working days to fill in the questionnaires after which they were collected.

3.7 Pilot Testing

A pilot study was carried out prior to the main study with the aim of determining both the reliability and validity of the research instrument. The piloting was done amongst randomly selected credit officers working with commercial bank branches in Naivasha town. The choice of banks in Naivasha town was in order to ensure that the participants of the pilot study were not going to take part in the main study.

3.7.1 Reliability Testing

Reliability is a measure of the internal consistency of a research instrument (Kothari, 2004). This implies that a reliable instrument can be administered on different populations with similar characteristics and return similar results. The study adopted the Cronbach alpha coefficient to test the reliability of the research questionnaire. The reliability threshold was alpha values equal to or greater than 0.7 ($\alpha \geq 0.7$). As shown in

Table 3.2, all the four predictor variables and the dependent variable returned alpha coefficients greater than 0.7 which implied that they were found to be reliable.

Table 3.2: Results of Reliability Test

Variables	**Test Items**	**α**
Loan appraisal process	6	0.81
Loan documentation process	5	0.79
Loan disbursement process	5	0.82
Monitoring and evaluation process	5	0.78
Non-performing loans	5	0.81
Average reliability	**26**	**0.80**

3.7.2 Validity Testing

According to Kimberlin and Winterstein (2008) a valid instrument is one that measures what it purports to measure. The present study sought to determine the content validity of the research instrument. This was achieved through consultation with the assigned university supervisor since content validity cannot statistically be determined (Kimberlin&Winterstein, 2008). After critical assessment of the content of the questionnaire, the supervisor suggested a few amendments that were dutifully addressed in the final questionnaire. It was ensured that the content of the questionnaire adequately addressed the objectives of the study.

3.8 Data Processing and Analysis

The researcher first verified the completeness of the filled questionnaires to ensure that only the appropriately filled ones were going to be considered in the analysis. The Statistical Package for Social Sciences (SPSS) Version 24 software was used to facilitate data analysis. Descriptive statistics and inferential statistics were used in the analysis.

Descriptive statistics encompassed measures of distribution (frequencies and percentages) measure of central tendencies (means) and measures of variation (standard deviations). Inferential statistics took the form of Spearman's rank correlation coefficient and multiple regression analysis. The null hypotheses were tested at 95% confidence level. The results of the analyses were presented in tables. The following multiple regression model was adopted.

$$\mathbf{Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon}$$

Where:

Y	represents	NPLs
β_0	represents	Constant
X_1	represents	Loan appraisal process
X_2	represents	Loan documentation process
X_3	represents	Loan disbursement process
X_4	represents	Monitoring and evaluation process
ε	represents	Errorterm
$\beta_1, \beta_2, \beta_3, \beta 4$	represent	Regression Coefficients

CHAPTER FOUR

FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results of data analyses and associated interpretations and discussions. The first part of the chapter outlines the response rate. The second part addresses the background information of respondents. This is followed by the descriptive and inferential statistical findings in respect to the study variables.

4.2 Response Rate

Response rate is also called questionnaire return rate in that it describes the proportion of the questionnaires that are returned having been filled accordingly in comparison to the total number of questionnaires issued to the respondents. In this study, the researcher issued 64 questionnaires to the sampled credit officers. After collection, it was found that a total of 58 questionnaires had been appropriately filled. This figure represented 90.63% response rate as indicated in Figure 4.1. This was way above the 75% recommended threshold in survey studies (Nulty, 2008). The relatively high response rate was attributed to the fact that the questionnaires were issued to the respondents by the researcher in person who explained the rationale of maximum participation in the study by the credit officers and also giving factual information.

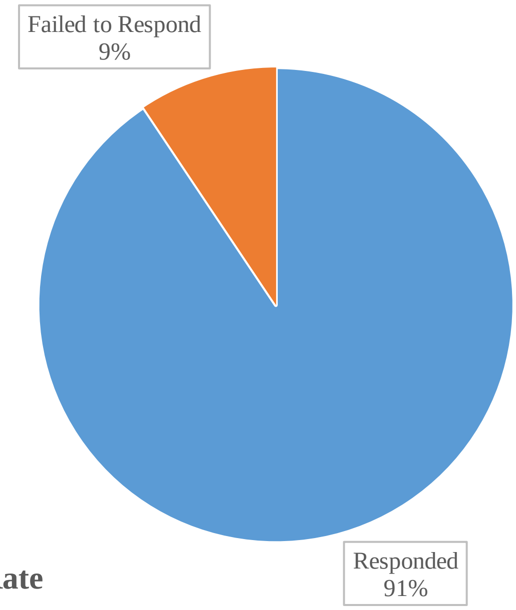


Figure 4.1: Response Rate

4.3 Background Information

The study evaluated a number of issues regarding the credit officers working with commercial banks in Nakuru town, Kenya. Some of the issues addressed include age, academic qualifications, professional qualifications, and working experience.

4.3.1 Age of Respondents

The study examined the distribution of the sampled credit officers according to their age. As shown in Table 4.1, majority of the credit officers (70.7%) were aged between 30 and 34 years. It was also revealed that only 6.9% of the credit officers were aged at least 35 years. The findings implied that commercial banks in Nakuru town were more inclined to recruiting credit officers who have relatively long experience and also young enough to have the required zeal to search for business.

Table 4.1: Distribution of Respondents by AGE

	Frequency	Percentage
25-29 years	13	22.4
30-34 years	41	70.7
35 years and above	4	6.9
Total	**58**	**100.0**

4.3.2 Academic and Professional Qualifications

The study examined the distribution of the sampled credit officers according to both their academic and professional qualifications. The foregoing was necessitated by the desire to understand the extent to which the said employees were qualified to carry out their tasks on behalf of their employers. The distribution of credit officers according to their academic qualifications is as shown in Table 4.2. The results of the analysis indicated that all the credit officers working commercial banks in Nakuru town at least had a first degree. It was also found that only 6.9 of these officers had post-graduate degrees. The findings were interpreted to mean that credit officers had adequate qualifications to execute their duties.

Table 4.2: Distribution of Respondents by Academic Qualifications

	Frequency	Percentage
First Degree	54	93.1
Post-Graduate Degree	4	6.9
Total	**58**	**100.0**

In addition, it was revealed as shown in Table 4.3, that majority of the credit officers (62.1%) failed to have any professional qualifications. The findings implied that commercial banks considered academic qualifications more than professional qualifications when employing credit officers.

Table 4.3: Distribution of Respondents by Possession of Professional Qualifications

	Frequency	Percentage
Possess Professional Qualifications	22	37.9
No Professional Qualifications	36	62.1
Total	**58**	**100.0**

The study as shown in Table 4.4 outlined the distribution of the various professional qualifications possessed by credit officers. It was revealed that, out of the 22 credit officers who admitted to have professional qualifications, 81.8% were Certified Public Accountants (CPA) while the remaining 18.2% possessed ACCA qualifications. The high percentage of CPA holders could have been as a result of the CPA being a locally examined and certified qualification while the ACCA has an internationally examined and certified professional qualification. The study also noted that none of the credit officers with professional qualifications had specific professional qualifications in credit. The foregoing could have been attributed to unpopularity of such qualifications and the possibility that when recruiting, commercial banks do not consider the recruits as credit officers; rather they are granted the tasks of being credit officers with time.

Table 4.4: Distribution of Respondents by Professional Qualifications

	Frequency	Percentage
CPA	18	81.8
ACCA	4	18.2
Total	**22**	**100.0**

4.3.3 Working Experience of Credit Officers

In addition, the study analyzed the distribution of the sampled credit officers according to their working experience both in credit and also with commercial banks. As shown in Table 4.5, most of the credit officers (55.2%) had worked in the credit department for a period ranging from 6 to 10 years. It was further revealed that only 1.7% of the credit officers had worked in the aforesaid department for a period of more than 10 years. These results could have been alluded to the fact that, as indicate in Table 4.1 and Table 4.2, majority of the credit officers were aged below 35 years. Therefore, it is factual for these employees to have worked for a period not exceeding 10 years since they acquired their first degrees.

Table 4.5: Distribution of Respondents by Credit Department

	Frequency	Percentage
Less than 5 years	25	43.1
6-10 years	32	55.2
11-20 years	1	1.7
Total	**58**	**100.0**

In addition, the study as shown in Table 4.6 revealed that 60.3% of the credit officers had worked with commercial banks for a period ranging between 5 and 10 years. Only 1.7 of them had worked with the said firms for a period of more than 10 years. These results corroborated the findings indicated in Table 4.5 where it was found that a similar percentage (1.7%) had worked in the credit department for a period of more than 10 years. The results further implied that for the entire duration the credit officers had worked with commercial banks, they were attached to the credit department.

Table 4.6: Distribution of Respondents by Work Experience with Commercial Banks

	Frequency	Percentage
Less than 5 years	22	37.9
5-10 years	35	60.3
More than 10 years	1	1.7
Total	58	100.0

The study further analyzed the duration that the sampled credit officers had worked with their present banks. The results as shown in Table 4.7 indicated that most of the credit officers (69.0%) had worked with their current banks for a period of more than 3 years while 31.0% had worked with the said financial institutions for a period ranging from 1 to 3 years. The results reflected relatively low turnover of credit officers. This could have stemmed from the fact that banks preferred to retain experienced credit officers who have created a history with debtors as opposed to recruiting new staff every now on then; a situation that would otherwise have proven to be costly.

Table 4.7: Distribution of Respondents by Work Experience with Present Commercial Banks

	Frequency	Percentage
1-3 years	18	31.0
More than 3 years	40	69.0
Total	**58**	**100.0**

4.4 Descriptive Analysis and Interpretations

This section presents the results of descriptive analysis and pertinent interpretations. The results are in tandem with the objectives of the study. In addition, the results are on a 5 point Likert scale where integers 1 to 5 stand for strongly disagree to strongly agree. The results are presented in from measures of distribution (frequencies), measures of central tendencies (means), and measures of dispersion (standard deviations).

4.4.1 Loan Appraisal Process

The study put into perspective the views of credit officers working with commercial banks in Nakuru town regarding loan appraisal process when employing mobile banking. The results to this effect are as shown in Table 4.8. As indicated, it is clear that it was largely strongly concurred (62.1%) that commercial banks verified credit history of prospective borrowers before lending them money on mobile platform (mean = 4.55; stddev = 0.680).The findings were in support of a previous local study conducted by Moti et al (2012) where it was emphasized that lending institutions should closely examine the credit history of borrowers as one way of addressing the challenges occasioned by NPLs. The results of the present study, in addition, tallied with the findings in a study conducted by Niaz and Azimun (2015) among commercial banks in Bangladesh where it was established that commercial banks, as a way of mitigating non-performing loans embarked on thorough loan appraisal process with the view of arresting credit risk. The main point of departure between the two studies was the fact that the present study centred on loan appraisal process as part of the mobile banking process while Niaz and Azimun's (2015) study focused on conventional banking processes.

The sampled credit officers, however, held divergent opinion regarding the proposition that capital of the borrower on the mobile platform was verified by the lending bank (mean = 3.22; stddev = 0.879). While only 37.9% at least agreed, 22.4% disagreed and 39.7% others were not sure of the same. It was further revealed that at least 88.0% of the credit officers admitted that cash flows of mobile-based borrowers were examined by the bank. In addition, a total of 84.25 of the sampled officers at least admitted that income levels of mobile-based borrowers were verified by the bank. Moreover, the study found that majority of the respondents strongly agreed (62.1%) that the bank determined the loan amount to advance to mobile-based borrowers (mean = 4.50; stddev = 0.778). In the same vein, it was found that 70.7% of the sampled credit officers concurred that the borrowing frequency of mobile-based borrowers was factored in before advancing credit facility to them.

Generally, the findings of this study indicate the thoroughness with which local commercial banks appraised prospective borrowers on mobile platform. This was contrary to the results of a previous study carried out by Sanusi (2012) in Nigeria. The latter study had established that there existed poor credit appraisal system, which was one of the factors that had rendered several commercial banks to be in financial distress. Yet the present study's findings reinforced the observations made in a past local study conducted by Mureithi (2010) where the importance of credit appraisal process among lending entities was underlined.

Table 4.8: Descriptive Statistics for Loan Appraisal Process

	SD	D	NS	A	SA	Mean	Std. Dev
Commercial banks verify credit history of prospective borrowers before lending money on mobile platform	0	3.4	0	34.5	62.1	4.55	0.680
The capital of borrower is verified by the bank	0	22.4	39.7	31.0	6.9	3.22	0.879
Cash flows of mobile-based borrowers are examined by the bank	0	6.9	5.2	75.9	12.1	3.93	0.672
Income levels of mobile-based borrowers are verified by the bank	0	8.6	5.2	65.5	20.7	3.98	0.783
The bank determines the loan amount to advance to mobile-based borrowers	0	5.2	1.7	31.0	62.1	4.50	0.778
The borrowing frequency of mobile-based borrowers is factored in before advancing credit facility	3.4	8.6	1.7	70.7	15.5	3.86	0.907

4.4.2 Loan Borrower's Documentation Process

The study further examined the views of the credit officers in regard to the documentation process of the borrowers as shown in Table 4.9. The respondents were found to generally disagree (mean = 1.41; stddev = 0.773) that commercial banks demanded for borrower's personal information before lending them money on mobile platform. Indeed, 56.9% of the respondents strongly disagreed with the proposition. It was further strongly disagreed by a majority of the credit officers (69.0%) that the banks demanded for information of borrower's family members before lending them money on mobile platform. Moreover, most of the respondents disputed that banks sought to know the sources of income of borrowers on mobile platform (65.5%). It was generally disagreed (mean = 1.67; stddev = 1.220) that banks sought information regarding borrower's residence. In addition, the study observed that credit officers disputed (mean = 1.81; stddev = 1.357) that lending banks sought information regarding borrowers' workplace or business premises.

These findings contrasted with the results of a study conducted in the United States by McCarthy (2014) which indicated that banks conducted extensive documentation of borrowers' sales, cash flow and collateral considerations. In the same vein, the present study's findings were contrary to the emphasis granted to documentation process in a study conducted by Wondimagegnehu (2012) in Ethiopia. The latter study has underscored the importance of documentation and keeping relevant documents alive particularly in relation to legal follow-ups. Another study that disputed the current results was conducted by Ibtissem and Bouri (2013) in Tunisia. The foregoing study had found that documentation was conducted prior to advancing credit to borrowers. The documents sought were employed as collateral to secure the credit facility being advanced by the lending institution.

Table 4.9: Descriptive Statistics for Borrowers' Documentation Process

	SD	D	NS	A	SA	Mean	Std. Dev
Our bank demands for borrower's personal information before lending money on mobile platform	56.9	27.6	0	12.1	3.4	1.41	0.773
Our bank demands for information of borrower's family members before lending money on mobile platform	69.0	25.9	1.7	1.7	1.7	1.78	1.155
Bank seek to know the source(s) of income of borrowers on mobile platform	65.5	19.0	3.4	1.7	10.3	1.72	1.281
Bank seeks information regarding borrower's residence	67.2	19.0	0	6.9	6.9	1.67	1.220
Bank seek information regarding borrowers' workplace or business premises	62.1	22.4	0	3.4	12.1	1.81	1.357

4.4.3 Loan Disbursement Process

In tandem with the third specific objective, the study evaluated the opinions of the sampled credit officers regarding process of disbursing loans on mobile phone platform. The results of the pertinent analysis are as illustrated in Table 4.10. The study revealed that respondents held very strong belief that disbursement of credit on mobile platform took short time once approved (mean = 4.79; stddev = 0.522) while 79.3% of the respondents strongly admitted that mobile-based loans were credited to borrower's bank account. The study also observed that majority of the credit officers (70.7%) strongly disagreed that mobile-based loans were credited to borrower's phone bank account. In the same light, it was generally strongly disputed (mean = 1.38; stddev = 0.721) that lending banks demanded for additional information before disbursing loans to qualified applicants. Lastly, the study noted that respondents generally admitted (mean = 4.40; stddev = 0.748) that mobile-based loans were approved on mobile platform.

The results of this study were in contrast to the findings of study commissioned by the CBI (2006) in Iraq. While the present study indicated that loan disbursement processed was finalized on the mobile platform without physical presentation of documentation to the lending commercial bank, the past study observed that loan disbursement was effected on after the borrower signed and delivered the requisite documents to the lending institution. A study conducted locally by Bichanga and Aseyo (2013) admitted that there are delays in disbursement of loans to borrowers. This is a departure from the present study findings where it is revealed that disbursement of loans to borrowers on mobile platform took relatively short time upon approval.

Table 4.10: Descriptive Statistics for Loan Disbursement Process

	SD	**D**	**NS**	**A**	**SA**	**Mean**	**Std. Dev**
Disbursement of credit on mobile platform takes short time once approved	0	1.7	0	15.5	82.8	4.79	0.522
Mobile-based loans are credited to borrower's bank account	3.4	0	0	17.2	79.3	4.69	0.799
Mobile-based loans are credited to borrower's phone bank account	70.7	13.8	1.7	6.9	6.9	1.66	1.236
Banks demands for additional information before disbursing loans to qualified applicants	70.7	24.1	3.4	0	1.7	1.38	0.721
Mobile-based loans are approved on mobile platform	1.7	1.7	0	48.3	48.3	4.40	0.748

4.4.4 Monitoring and Evaluation Process

The study further analyzed the views of credit officers working with commercial banks in Nakuru town in respect of monitoring and evaluation process undertaken when dealing with mobile-based loans. The results to this effect are as shown in Table 4.11. The study observed that there was a belief that commercial banks monitored the performance of mobile-based loans (mean = 4.22; stddev = 0.563). This was in contrast to the results of a study conducted in Pakistan by Haneef et al (2012) which revealed that that there existed weak monitoringmechanisms for credit quality of borrowers; a factor that occasioned huge capital losses.

It was also noted that 98.3% of the sampled respondents held the view that banks monitored how mobile-based loans were repaid by borrowers. This was in concurrence with observations made in a study carried out in Uganda by Nakayiza(2013), that effective and good loan portfolio managers have focused their energy on carefully monitoring the performance of advanced loans.

More so, the respondents agreed (mean = 4.10; stddev = 0.667) that an evaluation report was generated by the bank in respect of performance of mobile-based loans. It was also agreed that commercial banks had computerized systems to monitor performance of mobile-based loans. These results tallied with Nakayiza's(2013) study that adoption of computerized system has facilitated more effective monitoring and recovery of loans. In addition, the present study's results supported earlier findings made in a study conducted locally by Moti et al (2012), where it was indicated that there were arrear monitoring systems among MFIs. The point of departure, however, was the fact that while the present study centred on commercial banks, the latter one focused onMFIs. In addition, the study established that while 58.7 of the sampled credit officers at least admitted to being trained to handle mobile-based loan processes, 13.8% disputed the assertion.

Table 4.11: Descriptive Statistics for Monitoring and Evaluation Process of Mobile-based Loans

	SD	D	NS	A	SA	Mean	Std. Dev
Banks monitor the performance of mobile-based loans	0	1.7	1.7	69.0	27.6	4.22	0.563
Banks monitor how mobile-based loans are repaid by borrowers	1.7	0	0	72.4	25.9	4.21	0.614
An evaluation report is generated by the bank in respect to performance of mobile-based loans	0	5.2	1.7	70.7	22.4	4.10	0.667
Banks have computerized systems to monitor performance of mobile-based loans	0	3.4	1.7	74.1	20.7	4.12	0.595
Credit officers are trained to handle mobile-based loan processes	0	13.8	27.6	46.6	12.1	3.57	0.881

4.4.5Non-Performing Loans

The study further examined the opinions held by credit officers in regard to non-performing loans in their respective banks and in relation to mobile-based loans as outlined in Table 4.12. The study revealed that 77.6% of the sampled staff strongly concurred that commercial banks had significant bad debts occasioned by mobile-based loans. The foregoing results tallied with empirical evidence obtained in a local study carried out by Moti et al (2012) which indicated that microfinance institutions continued to suffer from huge non-performing loans, only that the latter study failed to focus on local commercial banks.It was also generally agreed (mean = 4.03; stddev = 1.092) that the duration of default in case of mobile-based loans was similar to other forms of loans. Majority of the respondents (32.8%) were found to strongly disagree that the life-cycle of NPLs for mobile-based loans was shorter than in other forms of loans. There were divergent opinion in respect to the proposition that commercial banks exhibited great degree of forbearance when dealing with mobile-based borrowers (mean = 3.33; stddev = 0.758). Most of the credit officers (48.3%) were not sure in respect to the foregoing statement. Moreover, it was agreed by the majority of the respondents (77.6%) that commercial banks kept on restructuring terms of mobile-based loans in order to address non-performing loans.

Table 4.12: Descriptive Statistics for Non-Performing Loans

	SD	**D**	**NS**	**A**	**SA**	**Mean**	**Std. Dev**
Banks have significant bad debts occasioned by mobile-based loans	0	0	3.4	19.0	77.6	4.74	0.515
Duration of default in case of mobile-based loans is similar to other forms of loans	6.9	3.4	5.2	48.3	36.2	4.03	1.092
Non-performance loans life-cycle for mobile-based loans is shorter than in other forms of loans	32.8	15.5	17.2	31.0	3.4	2.57	1.326
Banks exhibit great degree of forbearance when dealing with mobile-based borrowers	1.7	8.6	48.3	37.9	3.4	3.33	0.758
Banks keep on restructuring terms of mobile-based loans in order to address non-performing loans	8.6	3.4	3.4	77.6	6.9	3.71	0.973

4.5 Inferential Analysis and Interpretations

The study examined the effect of mobile-based lending on non-performing loan among commercial banks. To this effect, this section puts into perspective the results and interpretations in respect of correlation and multiple regression analyses.

4.5.1 Relationship between Mobile-based Lending and Non-performing Loans

This section covers the results of Spearman rank correlation analysis which outlines the relationship between each of the variables that characterize mobile-based lending and NPLs as shown in Table 4.13. The significance of the correlation was tested at 95% confidence level which is equivalent to 0.05 level of significance. As shown in Table 4.13, the correlation between loan appraisal process and non-performing loans was established to be positive, moderately strong and significant ($r = 0.451$; $p < 0.05$). These results were interpreted to mean that enhancing the process of loan appraisal was likely to result in increased NPLs. In ordinary circumstances, the foregoing results are contrary to the norm. As such, the queer results could be attributed to the fact that it was established to be a hectic process to appraise loans on the mobile platform. These results supported earlier findings in a study conducted in Pakistan by Sufi and Qaisar (2015) where it was established that client appraisal impacted significantly on the loan performance.

The study further revealed that there existed a negative, moderately strong and significant relationship between borrower's documentation process and NPLs ($r = -0.414$; $p < 0.05$). The interpretation of these results was that the more documentation of the borrowers was effected, the less the banks would record NPLs, and the reverse was also true. According to the findings, the banks that had greater documentation of prospective borrowers were less likely to post NPLs. The study further observed that albeit the fact that the relationship between loan disbursement process and NPLs was found to be positive ($r = 0.143$), the relationship was not statistically significant ($p > 0.05$). The results meant that process of disbursing loans was largely inconsequential to NPLs in commercial banks. Moreover, the study established that the relationship between monitoring and evaluation process and NPLs was positive, weak and statistically not significant ($r = 0.045$; $p > 0.05$). The foregoing results indicated that monitoring and evaluation of mobile-based loans was of very little effect on NPLs.

Table 4.13: Results of Spearman Correlations Matrix

			LAP	BDP	LDP	MEP	NPLs
Spearman's rho	**Loan Appraisal Process**	Correlation Coefficient	1.000				
		Sig. (2-tailed)	.				
	Borrower's Documentation Process	Correlation Coefficient	-.256	1.000			
		Sig. (2-tailed)	.053	.			
	Loan Disbursement Process	Correlation Coefficient	.373**	.202	1.000		
		Sig. (2-tailed)	.004	.129	.		
	Monitoring and Evaluation Process	Correlation Coefficient	.199	.337**	.359**	1.000	
		Sig. (2-tailed)	.135	.010	.006	.	
	Non-Performing Loans	Correlation Coefficient	.451**	-.414**	.143	.045	1.000
		Sig. (2-tailed)	.000	.001	.284	.739	.
		n	58	58	58	58	58

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

LAP represents 'Loan Appraisal Process'

BDP represents 'Borrower's Documentation Process'

LDP represents 'Loan Disbursement Process'

MEP represents 'Monitoring and Evaluation Process'

NPLs represents 'Non-Performing Loans'

4.5.2 Effect of Mobile-based Lending on Non-performing Loans

The study examined the extent to which mobile-based lending influenced NPLs. This was achieved through various inferential statistics including general correlation (R), coefficient of determination (R^2), analysis of variance, and regression coefficients. The study also determined the presence of any multicollinearity problems in the regression equation by use of variance inflated factors (VIF) and tolerance levels (T). In addition, the null hypotheses were tested by use of the results of the T-statistics. As shown in Table 4.14, the general correlation between mobile-based lending and NPLs was found to be positive and strong (R = 0.629). This implied that the more commercial banks emphasized on lending through the mobile platform, the more they were likely to record NPLs. In addition, the study noted that the variables characterizing mobile-based lending, that is, loan appraisal process, borrower's documentation process, loan disbursement process, and monitoring and evaluation process explained 39.6% of NPLs in commercial banks ($R^2 = 0.396$).

Table 4.14: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.629[a]	.396	.350	.42480

a. Predictors: (Constant), Loan Appraisal Process, Borrower's Documentation Process, Loan Disbursement Process, Monitoring and Evaluation Process

The study as shown in Table 4.15, further indicated that the general relationship between mobile-based loans and NPLs (R = 0.629) was statistically significant (F = 8.676; $p < 0.05$). To this effect, the study underscored the importance of mobile-based lending in NPLs with the emphasis being to reduce the level of lending via mobile platform.

Table 4.15: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.262	4	1.566	8.676	.000[a]
	Residual	9.564	53	.180		
	Total	15.826	57			

a. Predictors: (Constant), Loan Appraisal Process, Borrower's Documentation Process, Loan Disbursement Process, Monitoring and Evaluation Process

b. Dependent Variable: Non-Performing Loans

The results indicated in Table 4.16 presents regression coefficients, T-statistics, and collinearity statistics.

Table 4.16: Regression Coefficients, T-statistics and Collinearity Statistics

	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	1.828	.851		2.148	.036		
Loan Appraisal Process	.524	.145	.419	3.612	.001	.847	1.181
Borrower's Documentation Process	-.204	.062	-.381	-3.278	.002	.846	1.182
Loan Disbursement Process	.021	.223	.011	.096	.924	.822	1.217
Monitoring and Evaluation Process	.005	.172	.003	.027	.979	.730	1.371

a. Dependent Variable: Non-Performing Loans

First, the suitability of the following regression model was determined by determination of presence or absence of multicollinearity problems.

$$\mathbf{Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3+ \beta_4X_4 + \varepsilon}$$

The tolerance and VIF were used to test the collinearity of each of the predictor variables (loan appraisal process, borrower's documentation process, loan disbursement process, and monitoring and evaluation process). The acceptable threshold was $T \geq 0.1$ or $VIF \leq 10$ (Littel et al., 2000). The foregoing was premised on the fact that T is a reciprocal of VIF. According to the results indicated in Table 4.15, all the predictor variables were found to return Tolerance levels greater than 0.1 or VIF less than 10. Therefore, the aforestated regression model was found to be suitable. The regression model was interpreted as follows.

$$\mathbf{Y= \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3+ \beta_4X_4 + \varepsilon}$$

$$\mathbf{Y= 1.828+ 0.524X_1 – 0.204X_2 + 0.021X_3+ 0.005X_4}$$

Interpretatively, for NPLs to increase by a single unit, loan appraisal process, borrower's documentation process, loan disbursement process, and monitoring and evaluation process had to be changed by 0.524 units, -0.204 unit, 0.021 units, and 0.005 units respectively while holding other factors (1.828) constant. According to the findings, it is clear that loan appraisal process was the most important element of mobile-based loans in regard to non-performing loans in commercial banks. On the other hand, documentation process negatively impacted on non-performing loans. Illustratively, commercial banks are supposed to improve how they appraise the loans they lend on the mobile platform in order to arrest the escalating NPLs. The results of the T-statistics were employed to test the null hypotheses as follows.

i. **H_{01}:** There is no significant effect of loan appraisal process on non-performing loans in commercial banks in Nakuru town.

   H_a: There is significant effect of loan appraisal process on non-performing loans in commercial banks in Nakuru town.

   T-test statistics results = ($t = 3.612$; $p < 0.05$)

   Interpretation: There is significant effect of loan appraisal process on non-performing loans in commercial banks in Nakuru town.

   Verdict: The first null hypothesis (**H_{01}**) was rejected.

ii. **H_{02}:** There is no significant effect of loan documentation process on non-performing loans in commercial banks in Nakuru town.

   H_a: There is significant effect of loan documentation process on non-performing loans in commercial banks in Nakuru town.

   T-test statistics results = ($t = -3.278$; $p < 0.05$)

   Interpretation: There is significant effect of loan documentation process on non-performing loans in commercial banks in Nakuru town.

   Verdict: The second null hypothesis (**H_{02}**) was rejected.

iii. **H_{03}:** There is no significant effect of loan disbursement process on non-performing loans in commercial banks in Nakuru town.

H_a: There is significant effect of loan disbursement process on non-performing loans in commercial banks in Nakuru town.

T-test statistics results = ($t = 0.096$; $p > 0.05$)

Interpretation: There is no significant effect of loan disbursement process on non-performing loans in commercial banks in Nakuru town.

Verdict: The third null hypothesis (**H_{03}**) failed to be rejected.

iv. **H_{04}:** There is no significant effect of monitoring and evaluation process on non-performing loans in commercial banks in Nakuru town.

H_a: There is significant effect of monitoring and evaluation process on non-performing loans in commercial banks in Nakuru town.

T-test statistics results = ($t = 0.027$; $p > 0.05$)

Interpretation: There is no significant effect of monitoring and evaluation process on non-performing loans in commercial banks in Nakuru town.

Verdict: The fourth null hypothesis (**H_{04}**) failed to be rejected.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of major findings and interpretations made by the study in line with the objectives. It also covers conclusions drawn from the aforesaid findings. Moreover, the chapter presents a set of recommendations suggested by the study. Lastly, the chapter points out to areas for further studies in accordance to the revelations made in this study.

5.2Summary of Findings

The response rate for this study was found to be 90.63% which was not only acceptable but also very high. The study revealed that that commercial banks in Nakuru town were more inclined to recruiting credit officers who have relatively long experience and also young enough to have the required zeal to search for business. It was also noted that credit officers had adequate qualifications to execute their duties. In addition, the study revealed that commercial banks considered academic qualifications more than professional qualifications when employing credit officers. The study also noted that none of the credit officers with professional qualifications had specific professional qualifications in credit. Moreover, the study noted that majority of credit officers had worked with commercial banks for a period not exceeding 10 years. Furthermore, the study observed that for the entire duration of time the credit officers had worked with commercial banks, they were attached to the credit department. It was further established that there was relatively low turnover of credit officers among commercial banks in Nakuru town.

5.2.1Loan Appraisal Process and Non-Performing Loans

The study established that commercial banks verified credit history of prospective borrowers before lending them money on mobile platform. There were, however, varied opinions regarding the proposition that capital of the borrower on the mobile platform was verified by the lending bank. It was further revealed that cash flows of mobile-based borrowers were examined by the lending banks. In addition, it was admitted that income levels of mobile-based borrowers were verified by the banks. Moreover, the study found that majority of the banks determined the loan amount to advance to mobile-based borrowers. The study concurred that the borrowing frequency of mobile-based borrowers was factored in before advancing credit facility to them. It was further established that, the correlation between loan appraisal process and non-performing loans was positive, moderately strong and significant.

5.2.2Borrower's Documentation Process and Non-Performing Loans

According to the findings, it was disputed that commercial banks demanded for borrower's personal information before lending them money on mobile platform. It was also disagreed that the banks demanded for information of borrower's family members before lending them money on mobile platform. Moreover, it was disputed that banks sought to know the sources of income of borrowers on mobile platform. It was generally disagreed that banks sought information regarding borrower's residence. In addition, the sampled credit officers disputed that lending banks sought information regarding borrowers' workplace or business premises. The study further revealed that, the more documentation of the borrowers was effected, the less the banks would record NPLs.

5.2.3Loan Disbursement Process and Non-Performing Loans

The study revealed that there was a strong belief that disbursement of credit on mobile platform took short time once approved, and that mobile-based loans were credited to borrower's bank account. It was strongly disagreed that mobile-based loans were credited to borrower's phone bank account. In addition, it was strongly disputed that lending banks demanded for additional information before disbursing loans to qualified applicants. More so, the study noted that respondents generally admitted that mobile-based loans were approved on mobile platform. In addition, the study established that the process of disbursing loans was largely inconsequential to NPLs in commercial banks.

5.2.4Monitoring and Evaluation Process and Non-Performing Loans

The study observed that there was a belief that commercial banks monitored the performance of mobile-based loans and also thatcommercial banks monitored how mobile-based loans were repaid by borrowers. More so, it was agreed that an evaluation report was generated by the banks in respect to performance of mobile-based loans. It was also agreed that commercial banks had computerized systems to monitor performance of mobile-based loans. In addition, the study established that majority of the credit officers working with commercial banks in Nakuru town were trained to handle mobile-based loan processes, though there were some who had not acquired the requisite training. It was also indicated that monitoring and evaluation of mobile-based loans was of very little effect on NPLs.

5.2.5 Non-Performing Loans

The study revealed that commercial banks had significant bad debts occasioned by mobile-based loans. The duration of default in case of mobile-based loans was found to be similar to other forms of loans. It was strongly disagreed that the life-cycle of NPLs for mobile-based loans was shorter than in other forms of loans. There were divergent opinions in respect to the proposition that commercial banks exhibited great degree of forbearance when dealing with mobile-based borrowers. Moreover, it was agreedthat commercial banks kept on restructuring terms of mobile-based loans in order to address non-performing loans. The study found that, the more commercial banks emphasized on lending through the mobile platform, the more they were likely to record NPLs. It was also revealed that mobile-based lending explained 39.6% of NPLs in commercial banks. It is clear that loan appraisal process was the most important element of mobile-based loans while documentation was the least important in regard to non-performing loans in commercial banks. According to the study findings, commercial banks are supposed to improve how they appraise the loans they lend on the mobile platform in order to arrest the escalating NPLs.

5.3Conclusions

The study made several conclusions pertinent to both the study objectives and findings. Therefore, the conclusions outlines in this section are in tandem with loan appraisal process, borrower's documentation process, loan disbursement process, loan evaluation and monitoring process, and non-performing loans.

5.3.1Loan Appraisal Process and Non-Performing Loans

The study concluded that there were several shortcomings on the part of commercial banks during the process of appraising loans advanced on the mobile platform. Though, ithe banks were found to verify thecredit history of prospective borrowers before lending them money, the study concluded that it was not clear whether or not banks sought information regarding capital of the said borrowers. However, the study concluded that lending banks strived to examine the cash flows, income levels, and borrowing frequency of mobile-based borrowers. It was also concluded that the loan appraisal process had a significant relationship with NPLs.

5.3.2Borrower's Documentation Process and Non-Performing Loans

The study concluded that commercial banks in Nakuru town failed to demand for personal information of borrowers and also information regarding their family members prior to lending them credit on the mobile platform. In addition, the study inferred that commercial banks neither sought information regarding the income sources of borrowers nor their residence before giving them mobile-based loans. The banks further failed to seek information regarding the workplace and/or business premises of the borrowers before awarding the credit facilities. The foregoing was in spite of the indication that documentation process was very crucial in respect of NPLs. Conclusively, commercial banks risked to incur more NPLs for failing to get the necessary documentation of the borrowers.

5.3.3Loan Disbursement Process and Non-Performing Loans

The study deduced that it took a short time upon approval to disburse credit on mobile platform. The study concluded that in spite of applying for a loan through a mobile phone, the awarded loan was credit to the borrower's banks account as opposed to their phone's bank account. It was also concluded that banks did not demand for additional information before disbursing loans to qualified applicants. Moreover, it was inferred that the entire process from loan application to awarding of the mobile-based credit took place on the mobile platform. Lastly, the study concluded that that the process of disbursing loans was largely inconsequential to NPLs in commercial banks.

5.3.4Loan Monitoring and Evaluation Process and Non-Performing Loans

It was inferred that commercial banks monitored the performance of mobile-based loans. In addition, it was concluded that commercial banks monitored the repayment of loans disbursed via mobile platform. The banks were also found to generate evaluation reports for mobile-based loans. Moreover, the study deduced that commercial banks had computerized systems to monitor performance of mobile-based loans. Moreover, it was concluded that most of credit officers working with commercial banks in Nakuru town were trained how to deal with mobile-based loan processes. However, the study concluded that the monitoring and evaluation process was of marginal consequence on NPLs.

5.4Recommendations

The study made a number of recommendations in respect of mobile-based loans and non-performing loans. The study recommends that commercial banks should have a comprehensive process of appraising loans advanced via mobile platform in order to enhance the mechanisms of assessing creditworthiness of prospective borrowers. The appraisal process should entail factual credit history of the borrowers, their capital, cash flows, sources and levels of income, and also the borrowing frequency. In the event that, there is lack of clarity regarding the qualification of a given applicant, the lending banks should desist forthwith from awarding any sort of credit facility to the affected applicant in order to curtain potential occurrence of NPLs.

Every loan process encapsulates documentation. To this effect, the study recommends that mobile-based loans should not be exempted from the rigours involved in loan application process. The commercial banks should demand for online submission of authentic documents in respect to loan application. Such documents may include the details of the applicants, spouse, next of kin, employer, business, guarantor among others. Requirement should be similar across the board that is, irrespective of the amount of the loan applied. The documentation process is advisable to be cognizant of loan recovery procedure in case of default in order to effectively address NPLs.

The study recommends that mobile-based loans should be disbursed via mobile phone after authenticating the details of the applicants. There ought to be a limit amount beyond which the loans should not be advanced through mobile platform. The foregoing would minimize amounts of non-performing loans incurred by commercial banks. The study further recommends that the mobile-based loans should be closely monitored and evaluated in order to ensure that repayment is in tandem with contractual agreement. Moreover, the study advises that all credit officers should be trained how to handle mobile-based loans in order to reduce errors that could potentially occur.

5.5Suggestions for Further Research

The study suggests further comparative research in respect of mobile-based loans and normal loans and how such affect non-performing loans among commercial banks in Kenya. It is also important to conduct an empirical study on the impact of mobile-based lending on other financial aspects of commercial banks such as financial performance and financial growth. In addition, the study recommends further research on the technological ease of use and complexity as advanced by Davis (1995) in respect to mobile banking and how such, influences attractiveness of mobile-based loans and ultimately financial performance of commercial banks in Kenya.

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APPENDIX I

LETTER OF INTRODUCTION

Dear Respondent,

REF: <u>REQUEST FORDATA COLLECTION</u>

I am a Master of Business Administration (MBA) student at Jomo Kenyatta University of Agriculture and Technology (JKUAT). As part of my MBA (Finance Option), I am required to carry out a research project. In this respect, I am collecting pertinent data for a project titled: **Effect of mobile-based lending on non-performing loans in commercial banks in Nakuru town, Kenya.**

Kindly provide the required data by filling in the questionnaire accompanying this letter. Your participation will be highly valued and appreciated. Please note that the data collected will be treated confidentially and your identity will be concealed.

Thank you.

Yours faithfully,	University Supervisor
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David Murunga	**Dr. Patrick Kibati**

APPENDIX II

RESEARCH QUESTIONNAIRE FOR ACCOUNTS/FINANANCE STAFF

This questionnaire is an integral part of a study titled: **Effect of mobile-based lending on non-performing loans in commercial banks in Nakuru town, Kenya.** You are kindly requested to fill in the questionnaire according to the instructions provided. Kindly put a tick against the correct choice. Please remember not to indicate your name on the questionnaire.

Section I

Background Information

1. Kindly indicate your age category

Below 25 years	[ ]
25 -29 years	[ ]
30 -34 years	[ ]
35 years and above	[ ]

2. What is your highest academic qualification?

Certificate	[ ]	Diploma	[ ]
First Degree	[ ]	Post-Graduate Degree	[ ]

3. Do you have any professional qualifications?

Yes	[ ]	No	[ ]

4. If "Yes", kindly specify ………………………………………..

5. How long have you been attached to the credit department?

   Less than 5 years [ ]

   6 years 10 years [ ]

   11 years 20 years [ ]

   More than 20 years [ ]

6. How long have you worked with commercial banks?

   Less than 5 years [ ]

   5 to 10 years [ ]

   More than 10 years [ ]

7. How long have you worked with the present commercial banks?

   Less than 1 year [ ]

   1 to 3 years [ ]

   More than 3 years [ ]

Section II

Kindly indicate your level of agreement with the various propositions under each of following sections: access to capital, financial management, budgetary controls, funds disbursement, and successful project completion. Kindly use the following Likert scale:

1 (SD), 2 (D), 3 (NS), 4 (A), and 5 (SA) represent Strongly Disagree, Disagree, Not Sure, Agree, and Strongly Agree respectively.

Loan Appraisal Process

	SD 1	D 2	NS 3	A 4	SA 5
1. Commercial banks verify the credit history of prospective borrowers before lending money on mobile platform.					
2. The capital of borrower is verified by the bank.					
3. Cash flows of mobile-based borrowers are examined by the bank.					
4. Income levels of mobile-based borrowers are verified by the bank.					
5. The bank determines the loan amount to advance to mobile-based borrowers.					
6. The borrowing frequency of mobile-based followers is factored in before advancing credit facility.					

Borrower's Documentation Process

	SD 1	D 2	NS 3	A 4	SA 5
1. Our bank demands for borrower's personal information before lending money on mobile platform.					
2. Our bank demands for information of borrower's family members before lending money on mobile platform.					
3. Banks seek to know the source(s) of income of borrowers on mobile platform.					
4. Banks seek information regarding borrowers' residence.					
5. Banks seek information regarding borrowers' workplace or business premises.					

Loan Disbursement Process

	SD 1	D 2	NS 3	A 4	SA 5
1. Disbursement of credit on mobile platform takes short time once approved.					
2. Mobile-based loans are credited to borrower's bank account.					
3. Mobile-based loans are credited to borrower's phone account.					
4. Banks demands for additional information before disbursing loans to qualified applicants.					
5. Mobile-based loans are approved on mobile platform.					

Monitoring and Evaluation Process

	SD 1	D 2	NS 3	A 4	SA 5
1. Banks monitor the performance of mobile-based loans.					
2. Banks monitor how mobile-based loans are repaid by borrowers.					
3. An evaluation report is generated by the bank in respect to performance of mobile-based loans.					
4. Banks have computerized systems to monitor performance of mobile-based loans.					
5. Credit officers are trained to handle mobile-based loan processes.					

Non-Performing Loans

	SD 1	D 2	NS 3	A 4	SA 5
6. Banks have significant bad debts occasioned by mobile-based loans.					
7. Duration of default in case of mobile-based loans is similar to other forms of loans.					
8. Non-performance loans life-cycle for mobile-based loans is shorter than in other forms of loans.					
9. Banks exhibit great degree of forbearance when dealing with mobile-based borrowers.					
10. Banks keep on restructuring terms of mobile-based loans in order to address non-performing loans.					

Thank you for your time and cooperation.

APPENDIX III

LIST OF COMMERCIAL BANKS IN NAKURU TOWN

1. African Banking Corporation
2. Bank of Africa Kenya Limited
3. Bank of Baroda (K) Limited
4. Barclays Bank of Kenya Limited
5. CfCStanbic Bank Limited
6. Chase Bank (K) Limited (under receivership)
7. Commercial Bank of Africa Limited
8. Consolidated Bank of Kenya Limited
9. Co-operative Bank of Kenya Limited
10. Dubai Bank of Kenya Limited
11. Diamond Trust Bank Kenya Limited
12. Ecobank Kenya
13. Spire Bank
14. Equity Bank Kenya Limited
15. Family Bank Limited
16. Fina/GT Bank Limited
17. First Community Bank Limited
18. Guardian Bank Limited
19. Imperial Bank Limited (under receivership)
20. Jamii Bora Bank Limited
21. KCB Bank Kenya Limited
22. National Bank of Kenya Limited
23. National Industrial Credit (NIC) Bank Limited
24. Oriental Commercial Bank Limited
25. Paramount Bank Limited
26. Post Bank
27. Prime Bank Limited
28. Sidian Bank Limited
29. Standard Chartered Bank Kenya Limited
30. Trans-National Bank Limited

Source: CBK (2017)