EFFECT OF MOBILE-BASED LENDING ON LOAN DEFAULT RATE AMONG COMMERCIAL BANKS IN KENYA

BY

DORIS KATHAMBI

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DECLARATION

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

Signature: _____ Date: December 2, 2020

DORIS KATHAMBI BAITURU

REG No: D61/5933/2017

This research project has been submitted for examination with our approval as the university supervisors.

Signature: _____ Date: December 3, 2020

Dr. Helen Kinyua

Signature: _____ Date: December 3, 2020

Dr. Herick Ondigo

Department of Finance and Accounting,

School of Business,

University of Nairobi

DEDICATION

This research project is dedicated to my entire family, friends and most especially to my husband, Peter Kinyanjui and our children for their prayers, emotional and material support, love and encouragement they accorded me during my entire study.

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LIST OF ABBREVIATION AND ACRONYMS

ANOVA	Analysis of Variance
CBK	Central Bank of Kenya
KCB	Kenya Commercial bank
MFIs	Micro-finance Institutions
MPT	Modern Portfolio Theory
NPLs	Non-Performing Loans
PDAs	Personal Digital Assistants
SPSS	Statistical Package for the Social Sciences

ABSTRACT

Mobile based lending has acquired significant concern among Kenya's commercial banks because of its importance. Commercial banks' performance has greatly improved after the introduction of mobile based lending. Despite the benefits introduced by the increased use of mobile based lending, evidence shows that mobile based lending has contributed to exposure to risks. The focus of this study was determining the effect of mobile-based lending on loan default rate among commercial banks in Kenya. This study was anchored on bank focused theory, innovation diffusion theory and financial intermediation theories. Descriptive research design was adopted. The study targeted commercial banks in Kenya. The target population was 42 commercial banks and therefore, the study used census approach to select a sample size. Secondary data on loan default rate, mobile based lending, bank size, interest rate and risk exposure was collected from financial year 2015 to 2019. The data collected from the field was analysed by use of SPSS version 22.0 and presentation of research findings was done in figures and tables to enhance its efficiency and effectiveness in interpretation. This study used the regression model to determine the effects of mobile-based lending on default rate among commercial banks in Kenya. Mobile based lending was found to positively and significantly affect (β=0.414, p = 0.004) loan default rate among commercial banks in Kenya. The study also found that interest rate has a positive and significant (β=0.482, p=0.002) influence on loan default rate among commercial banks in Kenya. From the findings, the study found that bank size has a positive and significant influence (β=0.364, p=0.012) on loan default rate among commercial banks in Kenya. The study also established that the influence of risk exposure on loan default rate among commercial banks was significant (β=0.271, p=0.025). It is therefore important for commercial banks to embrace comprehensive process for loans appraisals-processes that are being dispersed via mobiles; this will help to improve assessment of borrowers that are credit worthy. It is also important for them to make sure that the appraisal process involves examining the credit history of the borrower, their flow of cash, capital, income levels, and also how frequent they are in borrowing.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Among the many functions conducted by commercial banks is lending (Agu & Basil, 2013). In this digital era, mobile phones are core to change in trends of carrying out business. Loan application has been made possible for customers with the use of mobile phones; this has led to significant reduction in transaction cost involving money transfer in commercial banks especially in Kenya. Mobile based lending has acquired significant concern among Kenya's commercial banks because of its importance. Commercial banks' performance has greatly improved after the introduction of mobile based lending. Despite the benefits introduced by the increased use of mobile based lending, Gennaioli, Shleifer and Vishny (2012), have provided evidence to show that mobile based lending has contributed to exposure to risks. Gubbins and Totolo (2018) showed that mobile based lending has contributed significantly to the number of individual defaulters among commercial banks.

The Bank focused theory was the theoretical foundation for this study; the theory explains that banks can benefit more through its adoption of advanced technology for instance mobile lending and providing its customers with other services (Lyman, 2006). Innovation diffusion theory which asserts that the origin of mobile lending was the need to continuously provide financial services (Mitchell, 1990), and financial intermediary theory which concluded that mobile lending costs is a link between the spending unit of surplus and deficit (Medoff, 2007).

The mobile lending in Kenya is continually transforming and shaping the banking sector. Kenya's banking industry has put more emphasis on mobile lending as a strategic tool in achieving the corporate objective of profit maximization and cost minimization. The banking bureaucratic process was a disqualifying factor especially for the poor rural people to open accounts with the banks. The introduction of mobile lending services which include M-shwari of the CBA, KCB- MPESA of KCB, M-Co-op cash of cooperative bank of Kenya and Equitel of the Equity Bank has eliminated geographical barriers to the customers and guaranteed convenience in carrying out transactions (CBK, 2011).

1.1.1 Mobile-Based Lending

According to Ross (1998) mobile based lending is the process whereby a customer of particular commercial bank applies for a loan and gets it approved through a mobile phone. The use of a mobile phone basically acts as a channel to conduct transactions. To measure mobile based lending, we use overall amount of loans applied through mobile phones, interest rates for this loans measures based on average rate for lending, the cost of transaction determined based on average transaction cost and liquidity measures as a ration between overall mobile loans and total assets. Majority of Kenya's commercial banks have embraced mobile lending model and their aim is to better the delivery of the services minimizing operation cost that arise from paper work as well as time which most of the time clients waste travelling to their banks.

Mobile lending innovation is significantly gaining popularity among the Kenyan commercial banks. The developing countries have experienced rapid spread of mobile phones in the

recent times Lyman (2006). According to Adedoyin (1992), one of the crucial practices of commercial banks is lending; therefore, it is important for its management to have the required skills to manage the activity because it will determine the organizations' success rate. Banks crucial activities are allowing room for investing as well as providing its clients with credit in times of financial difficulties. By offering the financial solutions to the business people and the state, it acts as a boost to economic growth in various sectors of the economy.

Commercial banks are increasingly developing applications that allow their clients to be in constant update with their accounts, portfolio holding, and also conduct transactions and apply for unsecured loans (RapidValue, 2012). Some of the major mobile banking applications which also act as lending platforms in Kenya includes: M-Shwari by CBA and Safaricom, Eazzy 247 by Equity bank, Timiza by Barclays bank, KCB Mobi-bank by Kenya commercial bank, and 'NIC now' mobile app by NIC bank, among others. Co-operative bank, National bank, CFC bank and Family bank also provide mobile banking services. These mobile banking technologies are services that are becoming acceptable to the consumers as they enable them to access some services, including getting small loans through their mobile phones without visiting the bank (Kirui, 2016). In this study mobile based lending was measured by the total amount of mobile loan issued by the bank.

1.1.2 Loan Default Rate

Loan default refers to lack of borrower's ability in paying their loans in due time (Adedapo, 2007). Loan default is used interchangeably with credit risk. Graham (2000) defined credit

risk as the loss that results from borrower's lack of ability to repay their loan when it's due. Also, violating the loan contract in any way can be defined as default and this includes not paying the interest accrued and the principle amount. Therefore, loan is delinquent or default if its instalments are overdue or the payment of either the principle amount or interest isn't fulfilled or when legally matured amount and is used (Ledgerwood, 2000).

Indicators of loan default are categorised into three; measuring actual amount paid against unpaid amount is measured using collection rates; arrears rates are used in measuring the amount overdue against the entire loan size; and portfolio at risk rates are applied in measuring the remaining due amount over the entire loan balance (CGAP, 1999). Studies by Sera (2016), Kucukkocaoglu and Altintas (2016) have also used non-performing loan ratios to measure default rates.

Banks can reduce the loan default rate by applying credit-scoring models allowing financial organizations to conduct risk enumeration, promoting better practice in lending. When conducting client screening, their character, capital, capacity, condition as well as collateral through which loans are to be given need to undergo a thorough examination (Boateng, 2015). In order for banking institutions to effectively manage its credit portfolio, it must ensure proper control of its credit culture and risk profile. This can only be accomplished if they clearly understand their portfolio structure and risk characteristics. It's important to comprehend the product mix of portfolios, industrial and geographic concentrations, the average rating of risks etc. Sound procedures, strategies, practices and personnel responsible for risk control should be ensured (Okpugie, 2009). Therefore, financial institutions having systems for managing risks that are efficient will be the only ones to survive the market

(Arunkumar & Kotreshwar, 2005). In this study loan default rate will be measured using the number of non-performing loans.

1.1.3 Mobile Based Lending and Loan Default Rate

The rise in financial innovations like M-banking and mobile-based lending in the banking sector has however given rise to various risks (Gennaioli *et al.,* 2012), among them credit risks which has led to increased default rate. A study by Gubbins and Totolo (2018) on digital credit in Kenya established that the population of defaulters reported to CRB has significantly increased due to digital credit. A study by Microsave (2017) also established that more than 2.7 million people in Kenya have been entered into CRB because of defaulting or lateness in payment.

Nonetheless, in-depth research needs to be conducted to provide clear understanding on how mobile-based lending specifically has contributed towards increased NPLs in the banking industry. In a report by Kenya Bankers Association (2019), it is approximated that in every 5 loans, at least one of them hasn't been repaid since 2017; this is in comparison with 10% of regular loan applicants. Out of every five loans applied through mobile phones, one of them is defaulted. In addition, between 2015 and 2018, defaulted loans received through mobile phones were 21%. The rate of default is twice the recommended ratio of NPLs for conventional borrowing which was found to be 10.2% between 2015 and 2018 (Kenya Bankers Association, 2019).

According to Murunga (2017), financial institutions should enhance its assessment of credit worthiness of prospective clients by advancing their comprehensive appraisal process through mobile banking platforms. In addition, loans provided through mobile phones should

also have documentation which is crucial in loan application. Disbursement of loans applied through mobile phones need to be done after the details of the borrower have been verified.

1.1.4 Commercial Banks in Kenya

Regulation of commercial banks in the country is done by Central Bank of Kenya; other regulated bodies are Non-bank Financial Institutions and Forex Bureaus. There are 42 commercial banks in the country, 1 mortgage financing institution and 2 banks under receivership (CBK, 2017). Over the past few years, the growth experienced in the banking industry has been tremendous. This has been evident with expansion in branch network; growth in asset base and capital, regional expansion of some banks, and automation of banks function to enhance customer service. Growth has been evident with automation of majority of bank services, expansion strategy for branch network in both East Africa Community and Kenya and also the focus on the needs of customers rather than the traditional banks products (CBK, 2016).

Some of the notable financial innovations in the Kenyan banking sector include mobile phone platforms, internet banking, and banking through agents. Several banks that are focusing on digital strategies such as automation of banking services to ease their customers' transactions (Xinhua, 2017). For example, KCB partnered with Safaricom, and came up with the KCB-MPESA product enabling clients to access loans through their phones. Equity Bank also developed 'Eazzy Loan' which is a mobile phone technology where the customers can access instant loans anywhere, anytime through their mobile phone.

In Kenya, out of the 43 commercial banks, only Equity Bank, CBK, Co-operative Bank and CBA have adopted fully mobile based lending. The going is really tough for banks, from the

release of the financial results for the first quarter of 2017 it was clear that business lending is a challenge that commercial banking institutions are struggling with. Income generated from interests earned and amount of loans advanced greatly declined for the top 10 largest banks in Kenya. Loan applicants grew but were mostly for small loans and the small loans were mostly offered through the mobile phones (Central Bank of Kenya, 2017). The introduction of mobile based lending has shaped the banking sector ranging from savings and lending. Many commercial banks in Kenya have posted impressive results courtesy of the mobile based lending platform. Despite this impressive performance, commercial banks are struggling with default as a result of increased adoption of mobile based lending.

1.2 Research Problem

The mobile based lending in Kenya is continually transforming and shaping the banking sector. The Kenya's banking sector has put more emphasis on mobile based lending as a strategic tool in achieving the corporate objective of profit maximization and cost minimization (CBK, 2010). The mobile banking platform in Kenya has enhanced access to credit, savings, insurance, payments and remittance services (Okiro & Ndung'u, 2013). Introduction of mobile phones in Kenya significantly changed the lives of Kenyans through communication and also in accessing financial services (World Bank report, 2015). However, the rise in mobile-based lending in the banking industry has given rise to various risks which threaten the banks bottom lines and survival (Gennaioli*et al.*, 2012). Mustafaet al., (2017) states that there is need for better understanding of mobile based lending and its contribution to NPLs in commercial banks, for effective management and reduction of default rates in commercial banks (Jamaat & Asgari, 2010).

In Kenya, a number of commercial banks are offering unsecured micro loans through mobile phone. Examples are Eazzy Loan by Equity Bank, Tala, Branch, Mshwari and KCB M-PESA by Kenya Commercial Bank in partnership with Safaricom. This has even been made easier with the introduction of mobile banking apps. The issuance of unsecured loans through mobile phones raises a lot of questions on commercial banks' exposure to credit risks and subsequently the default rates. This is bearing in mind that by 2016, the bad loans were 8% of overall issued loans by Kenya's commercial banks (CBK, 2016); this is way above acceptable limit of NPLs which is 4% of gross loans. Based on this backdrop, this study will seek to examine effects of mobile based lending on default rates among Kenya's commercial banks.

Empirical studies done internationally include; Košak and Poljšak (2010) examined factors determining defaulting of loans among Slovenia banks. It was evident that the loan defaulting was affected by the type of collateral, the industrial sector, loan size, satisfactory with loan maturity and the loan rating available. In Bangladesh, Islam *et al* (2005) explored factors causing defaulting rates and NPLs. It was established that key causes of default include reduction in borrower's attention by financial institutions. Kotiso (2018) conducted a study on the factors that affect default risk of Ethiopian Commercial banks. In Uganda, Kinyera (2014) conducted a research study in the central bank of Kampala with the sole purpose of determining factors causing high rates of loan defaulting.

Empirical studies done locally include; Chepkemoi (2015) who sought to determine how m-banking affects financial performance of commercial banks in Kenya and found that

performance and m-banking were positively and significantly related. In another study, Kathuo, Anyango, and Rotich (2015) focused on establishing impacts of m-banking on Kenya's banking organizations financial performance and found that m-banking has a positive impact on their performance. Ndagijimana (2017) researched on impacts mobile lending has on performance of Kenya's commercial banks and found that mobile lending has positive and significant effect on institution's performance.

Empirical studies done have looked at how m-banking affects commercial banks performance financially. These studies have failed to establish how mobile based lending affects loan default rate which is the gap this study sought to fill. This study sought to answer the following research question, what are the effects of mobile-based lending on loan default rate among commercial banks in Kenya?

1.3 Objective of the Study

To determine the effect of mobile-based lending on loan default rate among commercial banks in Kenya.

1.4 Value of the Study

Management of Kenya's commercial banks as well as other financial institutions offering mobile loans benefits from the study findings. There is increased issuance of unsecured loans through mobile phones by commercial banks, which is being boosted by increased adoption of technology and use of mobile phones. By knowing how mobile loans influences credit risks which subsequently affects the default rates, banks' management will have the ability of

making sound decisions and come up with measures that can be applied to ensure there is effective management of the credit risks that may emanate from the mobile loans.

Policy makers will benefit from this study and specifically the CBK and KBA, as they will get insight of how the mobile loans, which is a form of financial innovation, is affecting loan default rates in Kenya's commercial banks. They can therefore come up with policies or appropriate strategies, to regulate how banks transact mobile loans, so as to help the banks manage credit risks and loan default rates.

The study aside from adding value it is responsible for expanding knowledge on the relationship between mobile-based lending and loan default rates in Kenya's commercial banking institutions. The study will provide information that will help build the body of knowledge in this area and also be a source of reference to scholars and researchers. Research conducted in the future can use this study as a point of reference.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, literature relating to the study is reviewed. It starts by discussing theories guiding the research study and then reviews empirical literature related to mobile loans and credit risks in commercial banks. Lastly, summary of research gaps in the existing empirical literature is presented.

2.2 Theoretical Review

The review of theories supporting this study is presented in this section. The theories reviewed are; bank focused theory, innovation diffusion theory and financial intermediation theories.

2.2.1 Bank Focused Theory

This theory was pioneered by Lyman in 2006. According to Bank Focused theory, the banks have the ability of benefiting by embracing new technologies like mobile lending to provide services to their clients (Lyman, 2006). Through the use of mobile banking, customers are able to bank anytime which is convenient unlike the traditional methods where the customer is expected to physically visit the bank; this saves time and is convenient. There is easy access of the services, customers are able to access the financial records anytime anywhere and also perform transactions.

According to Gurley (2008), although the bank focused theory is more advantageous to the Commercial banks concerned, it has its limitations for example the security of the transactions are exposed to hacking which poses a greater security threat to the financial

transactions involved. Bank focused theory is relevant to the mobile base lending since it brings out the benefits accrued from the adoption of technologies. This study uses the bank focused theory in examining the effects of mobile-based lending on loan default rate among commercial banks in Kenya.

2.2.2 Innovation Diffusion Theory

The Innovation diffusion theory was pioneered by Rodgers in 2003. This theory focuses on explaining the reason, the way and what the rates of new idea diffusion are. Inventions like the introduction of business lending and adoption of internet have become part of daily business practices. Innovation refers to deliberately applying information with the aim of developing unique concepts (Mitchell, 1990). Introduction of mobile lending in Kenya was an innovation that was meant to provide financial services to its customers through their mobile phones. Innovations mainly depend on the introduction of new technology because it affects its usefulness, observability, compatibility and complexity. Innovation is important because it makes work easier by making sure that the number of transactions undertaken is maximum. Kenya's commercial banks have embraced mobile lending, and this has led to the increase in amounts of transactions undertaken.

CBA reported that by the end of 2014, total loans issued through M-shwari were at 21 million. Success of lending through mobile phones is based on compatibility of the transaction. Compatibility is the extent to which things are able to work together without any problem. Using mobile platform, customers have the ability of transacting with ease. Complexity on the other hand relates to the energy or effort required to comprehend the

technological changes. This theory clarifies on the importance of commercial banks embracing inventions for carrying out business. This study used the innovation diffusion theory in determining the impact mobile based lending has on Kenya's commercial banks' loan default rate.

2.2.3 Financial Intermediation Theory

Development of this theory was in the 60s by Gurley and Shaw (1960) and was based on agency and informational asymmetry theories. This theory asserts that intermediaries are introduced to minimize the costs of transactions such as costs in mobile lending, (Medoff, 2002). Financial intermediaries are institutions and individual which acts as the middleman in the business financial transactions. They act as institutions which offer the channel for transferring funds from savers to borrowers. A financial intermediary writes a separate contract with the surplus spending unit and deficit spending unit, providing each some economic value.

Financial intermediaries hold direct claims on deficit spending units as financial assets and issue direct claims to surplus spending units as liabilities. The financial intermediation theory is significant in this research as it points out significance of intermediation as a value creating economic process. This has been evidenced by the adoption of mobile lending by Kenyan banking institutions for example introduction of M-shwari by commercial bank of Africa aimed at reducing transaction costs. However, Stiglitz (2003) criticized the financial intermediation theory by arguing that due to the developments in deepening of financial markets, financial intermediation has become useless. This study used the financial

intermediation theory in determining the effects of mobile-based lending on loan default rate among commercial banks in Kenya.

2.3 Determinants of Loan Default Rate in Commercial Banks

Košak and Poljšak (2010) examined factors determining defaulting of loans among Slovenia banks. It was evident that the loan defaulting was affected by the type of collateral, the industrial sector, loan size, satisfactory with loan maturity and the loan rating available. This study looked at how mobile based lending, bank size, interest rate and risk exposure affects loan default rate.

2.3.1 Mobile Based Lending

Many banks in Kenya have embraced mobile lending model and the aim of this is to better the delivery of the services minimizing operation cost that arises from the paperwork required from customers and the time wasted when travelling to the bank. Lending through the mobile is an innovation that is gaining popularity among banks. The developing countries have experienced rapid spread of mobile phones in the recent times Lyman (2006). According to Adedoyin (1992), lending is an important component in banks; this calls for management to be equipped with adequate skills in managing vital components because it is the crucial determinant of banks performance.

2.3.2 Bank Size

The main source of income for commercial banks is usually interest income which is from the loans they advance. From the loan book, banks performance financially is also determined. The bank is therefore tasked with the responsibility of controlling deposits

because they ultimately affect the performance of the bank. It is the responsibility of the banking institution to make sure that the strategies they adopt are cost effective and can help them to improve their performance. Larger banks are more advantageous because they have the ability of accessing large deposits compared to small banks who by default, their deposits are low (Myers, 2005).

2.3.3 Interest Rate

The main economic determinant of bad loans or non-performing loan (NPLs) is the interest rate. When the interest rate increases, the ability of the borrower to pay their loans decreases and therefore, there is a positive correlation between interest rate and bad/NPLs (Nkusu, 2011). Therefore, the growth rate of NPLs in any economy is dependent on their policies on interest rates. As explained by Hoque and Hossain (2008) there is a high correlation between NPLs and high rates of interests which is responsible for increasing borrower's debt burden causing loans defaulting. The main responsibility of banks and any other financial institution is to mobilize savings, resource allocation, diversify and pool risks (Collins *et al.,* 2011). There are several reasons that cause the interest rate to be high and as listed by Nkusu (2011) they include: insufficient competition, small markets causing diseconomies, high fixed and operation cost, and the cost of transporting funds to telecommunication companies is high, there exists regulatory control and perceived risks in the market.

2.3.4 Exposure to Risk

Rogers (1998) explained that participating in activities that aren't traditional vary greatly from bank to bank because of varied risks among other characteristics. Banks consider risk to be of great significance when conducting their daily operations both in traditional as well as

non-traditional activities and therefore it is important to consider it in estimations. Principally, the capacity of the bank to absorb losses that were unforeseen is determinant of risk levels (Goddard et al., 2004). Traditionally, loan-loss provisions were what were used by banks in managing credit risk and NPLs. The exposure of banks to risk is usually measured using the ratio of loan losses to total assets (TA.

2.4 Empirical Review

In this segment of the study, empirical literature on the effects of mobile-based lending on loan default rate among commercial banks is reviewed. The section reviews empirical literature from the international and local level.

2.4.1 International Review

Bhasin and Harrison (2006) studied impacts of IT on banks performance in America between 1999 and 2004. A sample of 29 banks selected from USA was used in assessing the effects of information technology on banks profitability. Conclusions reached were that rising of commercial banks was after the banks adopted IT. This was after analysing secondary data using the SPSS software from the published financial statements.

Agboola (2006) researched on the impact information technology had on Pakistan banks financial performance. The researcher used secondary information collected from the website of all 31 banks which were practicing mobile banking between 2001 and 2005. Financial performance measurement ratios which included ROA, ROE and EPS were computed and compared before and after m-banking was introduced. Researchers have indicated that there was insignificant effect of information technology on financial performance.

Frank (2010) conducted a survey on impacts of mobile banking on companies' fiscal performance using companies from New York stock exchange between 2001 and 2008. Secondary data of the companies listed and had adopted mobile banking was analysed using the SPSS software from the sample of 25 companies that were selected. Financial performance ratios were also computed and analysed. The study concluded that adoption of m-banking significantly enhanced financial performance of these companies.

Blechman (2016) conducted research on tests regarding protection of customers on mobile lending in Tanzania and Kenya. From the study, it was evident that mobile credit is a new financial service allowing clients to apply for loans through their mobile phones and get them on the same platform. In Kenya and Tanzania, the success rate of mobile loans has been significant. The study revealed that mobile credit loans have the potential to expose financial institutions to credit risk. However, the author argues that credit history of an individual can be built if these mobile loan platforms could report timely repayments by their clients and this information can also be used in leveraging large loans from traditional sources. In addition, reporting late payers can help in warning lenders that these are risky borrowers. The study recommends policy makers and regulators to develop policies that can be used in regulating mobile loans; this is in line with protection of customers, reporting of credit, the use of transactional information collected from lending platforms and important information pertaining decision evaluation.

2.4.2 Local Review

Kibugo and Maina (2016) investigated the impacts financial innovations have on MFIs performance. Research study was carried out in Nakuru Township and focused on innovations in the banking sector such as m-banking, mobile lending and mobile money transfer. Employees of MFIs were targeted and were used to collect primary data using questionnaires. It was evident that performance of the organization was influenced positively and significantly with the innovations in the market. Organizational performance was enhanced by strategically positioning the company.

A research study carried out by Murunga (2017) among commercial banks in Nakuru town sought to establish how lending processes based on mobile affected NPLs. Descriptive survey research design was adopted and 172 employees working with credits department within the 37 commercial bank branches in the area were targeted. It was evident from the study that banks that insisted more on providing loans through mobile platforms recorded higher NPLs. Conclusions drawn was that NPLs significantly related with the process of loan appraisal used in the company. When the bank does not insist on obtaining the required documents from a borrower then chances of them incurring NPLs increases.

Ndagijimana (2017) conducted a study that sought to determine the impacts mobile lending has on Kenya's commercial banks performance. It was a census study of commercial banking institutions practising mobile lending. The study collected secondary data from CBK reports. It was evident that banks' financial performance was positively and significantly affected by mobile lending. Recommendations made were for banks to integrate mobile lending in their activities. However, the bank should determine its exposure to risks since it

would affect its financial well-being. Kaffenberger and Chege (2016) also revealed that even though digital credit offerings had led to increased household liquidity, offered small business loans for entrepreneurs; they raised questions on the ways customers were actually using the products, and risks such loans might raise or expose the financial institutions. The authors noted that loans offered through digital platforms have a higher rate of interest and multiple fees thus increasing chances of defaulting.

Wainaina (2017) focused on determining effects of practices of loan management for loans based on mobile in Kenya's commercial banks. Researchers focus was on impacts of credit scoring systems, average repayment period; and analyse the mobile loans risk profile and default patterns in Kenya's commercial banks. It was clear that risk profile and default patterns linked to mobile based loans had negative influence on banks performance. Banks were recommended to develop good systems for credit scoring and consider making adjustments to repayment period for mobile-based loans and also come up with strategies for minimizing default incidence.

2.5 Conceptual Framework

The hypothesised relationship between variables as is presented in a diagram form is defined as a conceptual framework. The independent variable is mobile-based lending which is measured by the number of loans disbursed/issued to a client through a mobile phone and also the amount of loan disbursed to a client through a mobile phone. The dependent variable is loan default rate in commercial banks measured using number of NPLs. Figure 2.1 presents this study's conceptual framework.

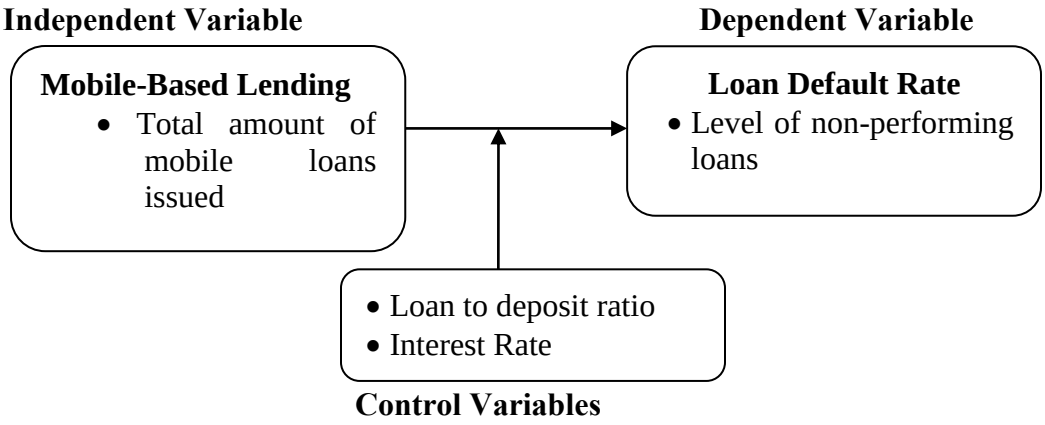

Figure 2.1: Conceptual Model

2.6 Summary of Literature Review

Studies gone through have covered the concept of mobile based lending. From the empirical review, it can be deduced that the causes of loan default in banks are numerous and varied. It is also apparent that the existing studies have not offered adequately substantiated the link between lending via mobile platforms and credit risks in banks. Majority of the researches were carried out on financial innovations at large; without specifically looking at how mobile-based lending is affecting loan default rates in the banks, bearing in mind that most of these loans are unsecured. No notable study has been done in Kenya to investigate the effects of mobile-based lending on loan default rate in commercial banks in Kenya. This study therefore sought to fill that gap.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section of the study covers the research methodology that was adopted in investigating the research objectives. Specifically, the design used, target population, sample size and sampling techniques, instruments used for data collection, pilot test and data analysis techniques are presented.

3.2 Research Design

Descriptive research design was adopted. This type of research design is responsible for answering the, who, what, when, where and how question relating to the research question/problem. This research design collects information about a phenomenon as it exists naturally in the environment without manipulating it in any way (Anastas, 2009). The design observes, describes and documents aspects of a situation as it naturally occurs. This study adopted the descriptive method because it helps in describing associations between variables and also helps in answering questions on current events. Hence, it is a suitable method in establishing the relationship between mobile-based lending and credit risks in commercial banks in Kenya.

3.3 Target Population

Commercial banks in Kenya formed the target population. As at December of 2019, there were 42 fully registered banks. Sampling technique used was census. As explained by Cooper and Schindler (2011), the most feasible approach to use for a small population is census because the elements that are being considered are unique. This study therefore

considered census approach to be the most suitable technique because of the small population size. Therefore, the sample size for this study was all the 42 commercial banks in Kenya (Appendix III).

3.4 Data Collection

Secondary data was used. The data was collected on non-performing loans, bank lending, mobile lending, bank's weighted average rates, mobile loan interest rates, provision of loan losses and bank total assets was gathered from the banks' annual financial report. The source of financial data was past and immediate financial reports from the commercial banks and annual reports and financial statements from CBK (www.Centralbank.go.ke). Secondary data was easily available, and this saved on time and the information was standardized. Data was collected from financial year 2015 to 2019. This is the period under which most commercial banks introduced mobile lending platforms.

3.5 Diagnostic Tests

Diagnostic tests were conducted to check on the following assumptions; normality, multicollinearity, test for autocorrelation and Heteroscedasticity. If the assumptions do not hold it would mean that multiple regression analysis were misleading.

3.5.1 Normality Assumption

One of the assumptions of linear models is that there is normal distribution in the error term, having a mean of zero and a constant variance (μ 0, σ 2). Usually, other aspects affecting the dependent variable excluded in the model are captured by the error term (Gujarati, 2004). This study therefore ensured this assumption is met by computing Shapiro- Wilsk test.

3.5.2 Multicollinearity

Because most of the time series data tend to follow a particular trend, multicollinearity is a common occurrence. Over time, values could either increase or decrease. If the data has multicollinearity, then the coefficients obtained from the regression model will be indeterminate (Gujarati, 2004). This study therefore checked for this assumption using Variance inflation factors (VIF) (Nachtscheim, 2004).

3.5.3 Test for Autocorrelation

Autocorrelation is common for time series data because as time changes, it tends to follow particular trends. Therefore, there are high chances that successive observations will be inter correlated. Linearity, biases, asymptotic state of estimators are not affected by autocorrelation, the only effect it has is on OLS's best property of producing correct results when testing for hypothesis. This study tested for this assumption using the Breusch Godfrey test (Gujarati, 2004).

3.5.4 Heteroscedasticity

Lack of bias and linearity is not affected by heteroscedasticity. It only affects OLS best property and therefore results in wrong results when testing for hypothesis. This study tested for this assumption using Breusch-Pagan test (Gujarati, 2004).

3.6 Data Analysis and Presentation

In any statistical investigation, the researcher seeks to determine the link existing between response and predictor variables (Freund, 2001). Data collected from the field was analysed by use of SPSS and presentation of research findings was done in figures and tables to enhance its efficiency and effectiveness in interpretation.

3.6.1 Analytical Model

A regression model by Shojai (1999) was used in determining the effect of mobile-based lending on loan default rate among commercial banks in Kenya. The study used annual data for each of the variables. The model was as follows: -

$LDR = \beta_0 + \beta_1 MBL + \beta_2 BS + \beta_3 IR + \beta_4 RE + \epsilon$

Where;

LDR= the measure of the loan default rate, was measured by the ratio of NPLs to the amount of outstanding loan.

β_0 = a constant term which is the intercept of the regression equation

β=the coefficient of the variables where βi represents the sensitivity of a bank i's income level to changes in the movements of the various variables

MBL= this is mobile based lending, determined by the ratio of mobile based lending to total lending.

BS = is the bank size was determined based on the log of banks total assets

IR = is the interest rate was measured using the prevailing interest for mobile based lending annually.

RE = is the risk exposure of the bank, which was measured using the ratio loan losses provision to total assets and is applied in determining the exposure of the bank to risk.

ϵ = Error Term

3.6.2 Test of Significance

Regression analysis was applied in determining the impact independent variables have on the dependent variable. Difference in mean squares and chi-square test was used to determine the probability that mobile based lending and loan default rate are linked. The t-test is one of many tests used for the purpose of hypothesis testing in statistics. A significance level of 5% was used.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSION

4.1 Introduction

The findings of the study based on the data collected are presented in this chapter. The study used secondary data from all the 42 commercial banks. The information was gathered over a period of five years from 2015 to 2019. The study computed descriptive and inferential statistics.

4.2 Descriptive Statistics

The study presented the summary statistics of the data collected in this section. The data was summarized using descriptive statistics.

Table 4.1: Descriptive Statistics

	Obs.	Minimum	Maximum	Mean	Std. Deviation
Loan Default Rate	210	2.8	10.5	18.1	.12813
Mobile Based lending	210	12.8	17.6	13.7	.18814
Interest Rate	210	14.33	25.7	.5184	.11334
Bank Size	210	.44	1.842	.8613	.51698
Risk Exposure	210	3.8	9.7	6.1	.33551

Source: Research Findings (2020)

From the findings, the minimum value of loan default rate recorded by commercial banks between 2015 and 2019 was 2.8% while the maximum value was 10.5%. Mobile bank lending recorded a minimum of 12.8% and a maximum of 17.6% and the average for the period under consideration was 13.7%. Further, regarding interest rate a minimum of 14.33% and a maximum of 25.7%. The findings further established that bank size (measured using

the log to banks overall assets) recorded a minimum of 0.44 and a maximum of 1.842 while the average for both pre and post-capping was 0.8613. Finally, regarding risk exposure, between 2015 and 2019, the minimum was 3.8% while the maximum was 9.7% and on average, commercial banks had 6.1% rate of risk exposure.

4.3 Correlation Analysis

Correlation analysis showed the strength and the direction of the relationship between the variables under study. The study correlated loan default rate against mobile based lending, bank size, interest rate and risk exposure. Table 4.2 presents the findings.

Table 4.1: Correlation Analysis

		Loan Default rate	Mobile based lending	Interest rate	Bank Size	Risk Exposure
Loan Default rate	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	210				
Mobile based lending	Pearson Correlation	.709**	1			
	Sig. (2-tailed)	.000				
	N	210	210			
Interest rate	Pearson Correlation	.745**	.402	1		
	Sig. (2-tailed)	.000	.000			
	N	210	210	210		
Bank Size	Pearson Correlation	.630**	.270	.093	1	
	Sig. (2-tailed)	.003	.116	.597		
	N	210	210	210	210	
Risk Exposure	Pearson Correlation	.740**	.367	.275	.621	1
	Sig. (2-tailed)	.004	.080	.071	.100	
	N	210	210	210	210	210

Source: Research Findings (2020)

From the findings, loan default rate strongly and positively correlated with mobile based lending (r=-0.709). Loan default rate was strongly and negatively correlated with interest rate (r=0.745). The findings also showed that loan default rate strongly and positively correlated with bank size (r=0.630). Finally, non-funded income was found to have a strong positive correlation with risk exposure (r=0.740). From the findings, all the variables had their significance valued below 0.05, suggesting they all had significant correlations. Also, they were all strongly correlated since their correlation coefficient values were greater than 0.50. This is an indication that there was strong significant relationship between mobile based lending, bank size, interest rate, risk exposure and loan default rate.

4.4 Regression Analysis

Multiple regression analysis was computed in order to test influence of mobile-based lending on loan default rate in commercial banks in Kenya. SPSS was used in coding, entering and computing the measures of the regression. The effects of mobile based lending, bank size, interest rate and risk exposure on loan default rate were presented in three tables here-under.

Table 4.2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879[a]	.773	.765	.33812

a. Predictors: (Constant), mobile based lending, interest rate, bank size, risk exposure

Source: Research Findings (2020)

Model summary is used in determining the percentage of variation in dependent variable that is attributed to the independent variables. As seen in Table 4.3, the adjusted R square is 0.765; this means that 76.5% variation in loan default rate among commercial banks can be explained by changes in mobile based lending, interest rate, bank size and risk exposure. The

remaining 23.5% suggest that there are other factors that contributed to changes in loan default rate among commercial banks that were not included in the study. The study findings further established that the variables included in the model were strongly and positively related as indicated by correlation coefficient (R) alue of 0.879.

Table 4.3: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.028	4	1.257	11.028	.001[b]
	Residual	23.484	206	0.114		
	Total	28.512	210			

a. Dependent Variable: Loan Default Rate
b. Predictors: (Constant), mobile based lending, interest rate, bank size, risk exposure

Source: Research Findings (2020)

Model significance is applicable in testing significance. In this study, significance was tested at 5%. From the findings, the p-value obtained (0.001) was less than the selected level of significance (0.05); this suggests the model is significant. Therefore, the model can be used in predicting default. The study further found that F-critical value (2.408) is less than the f-calculated value (11.028) an indication that mobile based lending, interest, bank size and risk exposure can be used in predicting loan default rate among commercial banks in Kenya.

Table 4.4: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.876	0.107		8.187	0
	Mobile based lending	0.414	0.078	0.351	5.308	0.004
	Bank size	0.364	0.071	0.358	5.127	0.012
	Interest rate	0.482	0.097	0.467	4.969	0.002
	Risk Exposure (RE)	0.271	0.058	0.264	4.672	0.025

a. Dependent Variable: Loan Default Rate (LDR)

Source: Research Findings (2020)

The following regression model was fitted;

LDR= 0.876 + 0.414MBL + 0.364BS+ 0.482IR + 0.271RE + ϵ

From the above equation, it is evident that holding mobile based lending, bank size, interest rate and risk exposure to a constant zero, loan default rate would be at a constant value of 0.876.

The findings further show that mobile based lending has a positive influence on loan default rate (β=0.414). The influence of mobile based lending is found to be significant since its significance (0.004) is below the selected level (0.05). These findings therefore suggest that mobile based lending positively and significantly affect loan default rate among commercial banks.

The study also found that bank size positively influences on loan default rate (β=0.364). The influence of bank size on loan default rate was seen to be significant as shown by its p-value (0.012) which is below the selected significance level (0.05). These findings suggest that bank size has a positive and significant influence on loan default rate among commercial banks in Kenya.

Further, the findings showed that interest rate positively and significantly affect loan default rate (β=0.482, p=0.002). The influence was considered significant because its p-value (0.002) was below selected significance level (0.05). Therefore, increasing interest rate by a single unit will cause loan default rate to increase by 0.482 units.

Finally, risk exposure was found to positively affect loan default rate (β=0.271). The influence of risk exposure on default rate was found to be significant since the p-value (0.025) was below the selected significance level (0.05). These findings suggest that risk exposure has a positive and significant influence on loan default rate.

4.5 Discussion of Findings

The study found that mobile based lending, bank size, interest rate and risk exposure can be used in explaining variation in loan default rate. Further, it was revealed that changes in mobile based lending, bank size, interest rate and risk exposure could explain 76.5% variation in loan default rate among commercial banks in Kenya. This is a clear indication that mobile based lending, interest rate , bank size and risk exposure signficanly affects loan default rate among commercial banks in Kenya. From the regression findings mobile based lending, bank size, interest rate and risk exposure were found to positively and significantly affect loan default rate among commercial banks in Kenya. These findings suggest that increasing mobile based lending, bank size, interest rate and risk exposure of Kenya's commercial banks will result to an increase in loan default rate.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary, conclusion and recommendations of the study based on analysed data. The objective of the study was establishing effects of mobile-based lending on loan default rate among commercial banks in Kenya.

5.2 Summary

The objective of the study was to establish the effect of mobile-based lending on loan default rate among commercial banks in Kenya. Descriptive study design was adopted and data from 42 commercial banks was collected. Data used in the study was collected over a period of 5 years from 2015 to 2019. The study used secondary data collected from banks financial reports and CBK reports. SPSS was employed for data analysis where multiple regression analysis was computed.

The study found that mobile based lending, bank size, interest rate and risk exposure can be used in explaining variation in loan default rate. The study also estabslihed that changes in mobile based lending, bank size, interest rate and risk exposure explained 76.5% variation in loan default rate among commercial banks in Kenya. This is an indication that mobile based lending, interest rate, bank size and risk exposure signficantly influences loan default rate among commercial banks in Kenya. From the regression findings, mobile based lending, bank size, interest rate and risk exposure were found to positively and significantly influence loan default rate among commercial banks in Kenya. These findings suggest that increasing

mobile based lending, bank size, interest rate and risk exposure of Kenya's commercial banks will result to an increase in loan default rate.

5.3 Conclusions

Mobile based lending was found to positively influence loan default rate among commercial banks in Kenya. The influence was also found to be significant. Therefore, mobile based lending positively and significantly influences loan default rate among commercial banks in Kenya.

The study also found that interest rate has a positive influence on loan default rate among commercial banks in Kenya. The influence of interest rate was also found to be significant. From the findings, the study concludes that interest rate positively and significantly influences loan default rate among commercial banks in Kenya.

The study also found that bank size has a positive influence on loan default rate among commercial banks in Kenya. The influence was further found to be significant. From the findings, the study concludes that bank size positively and significantly influences loan default rate among commercial banks in Kenya

Finally, the study established that risk exposure has a positive influence on loan default rate among commercial banks in Kenya. The influence of risk exposure on loan default rate among commercial banks was significant. The study therefore concludes that risk exposure has a positive and significant influence on loan default rate among commercial banks in Kenya.

5.4 Recommendations for Policy and Practice

Mobile based lending was found to positively influence loan default rate among commercial banks in Kenya. It is therefore important for commercial banks to embrace comprehensive process for loans appraisals-processes that are being dispersed via mobiles; this will help to improve assessment of borrowers that are credit worthy. It is also important for them to make sure that the appraisal process involves examining the credit history of the borrower, their flow of cash, capital, income levels, and also how frequent they are in borrowing. When there is lack of clarity on whether the applicant qualifies to borrow, the bank should not advance loans to the said individual to prevent the risk of them defaulting; the bank should be completely certain on borrower's information.

Mobile-based loans should also undergo the rigorous process any loan application is involved in. The banks should make it mandatory for its applicants to submit authenticating documents for the loan application. This includes their details, those of their spouses, employer, business and/or guarantor. Regardless of the loan size, the requirements should be the same. The banks should also ensure that their documentation is conscious of the recovery process in instances of loan defaulting; this will help them address default rate effectively.

It is recommended that before the mobile loans are disbursed, it is important to ensure first that the details of the borrower have been authenticated. The bank should set a limit of the amount of money that can be disbursed via the mobile; this will help to reduce the default risk. It is further recommended for loans disbursed via mobile platforms to be monitored and evaluated closely to ensure that its repayment is in line with the agreed terms. In addition,

there is need for the bank to train its credit officers on ways of handling mobile-based loan for the purpose of reducing any errors that might occur.

The study found that interest rate positively influences loan default rate. Therefore, management of commercial banks and central bank need to come up with favorable rate for mobile based lending that will not lead to increase in default rate hence increasing NPLs which might harm the bank. Banks size positively and significantly influence default rate among commercial banks in Kenya therefore, management of large banks should make every effort to diversify products through their investment in financial markets and the sale of mutual funds. Through their economies of scale, large commercial banks can take advantage and control of loan production to its customers. Banks consider risk to be of great significance when conducting their daily operations both in traditional as well as non-traditional activities and therefore it is important to consider it in estimations. Principally, the capacity of the bank to absorb losses that were unforeseen is determinant of risk levels; the bank should ensure it is in a position to absorb the risk.

5.5 Limitation of the Study

Data used was gathered from yearly reports provided by the bank and from the website of CBK. Because the data was collected from secondary sources, they were limited to their level of accuracy. The focus of this study was to establish effects of mobile based lending on loan default rate among Kenya's commercial Banks. The data was from a 5-year period which was 2015 to 2019. If the study focused on a longer period, it could have captured different periods that were varying and therefore provide a wider view of the problem.

The focus was on the 42 commercial banks fully registered by CBK, including financial organizations like SACCOs and MFIs would provide a wider perspective on the impacts of mobile based lending on loan default rates.

5.6 Suggestions for Further Research

There is need to replicate the study in individual banks. There is need to investigate the effects of mobile based lending on financial performance of banks. There is need to conduct a study on factors influencing the adoption of mobile based lending among commercial banks in Kenya.

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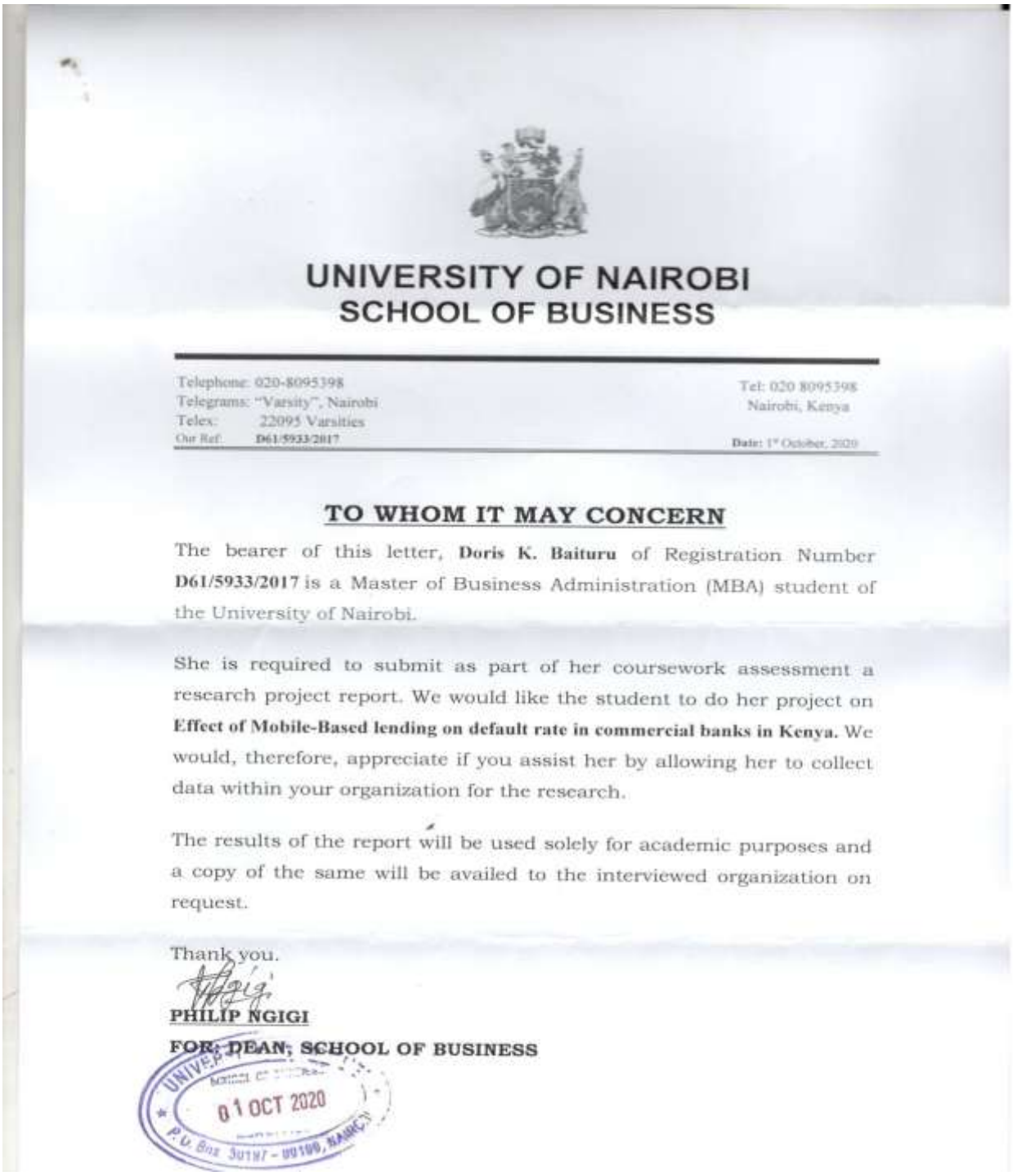
APPENDICES

Appendix I: Introductory Letter



UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

Telephone: 020-8095398
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsities
Our Ref: D61/5933/2017

Tel: 020 8095398
Nairobi, Kenya

Date: 1st October, 2020

TO WHOM IT MAY CONCERN

The bearer of this letter, **Doris K. Baituru** of Registration Number **D61/5933/2017** is a Master of Business Administration (MBA) student of the University of Nairobi.

She is required to submit as part of her coursework assessment a research project report. We would like the student to do her project on **Effect of Mobile-Based lending on default rate in commercial banks in Kenya.** We would, therefore, appreciate if you assist her by allowing her to collect data within your organization for the research.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organization on request.

Thank you.

PHILIP NGIGI

FOR: DEAN, SCHOOL OF BUSINESS

01 OCT 2020

Appendix II: Data Collection Sheet

	2015	2016	2017	2018	2019
Non-Performing Loan Ration					
Total Bank Lending					
Total Mobile Lending					
Commercial Banks Weighted Average Rates					
Mobile Loan Interest Rate					
Provisions for Loan Losses					
Bank Total Assets (Size)					

Appendix III: Data Summary

Bank	Default Rate	Mobile based lending	Risk Exposure	Interest rate	Size
African Bank Corporation	0.18	0.0271	0.9004	0.1957	0.8721
Bank of Africa Kenya Ltd.	0.11	0.1139	0.9587	0.1566	0.6370
Bank of Baroda(K) Ltd	0.12	0.1438	0.6704	0.2057	0.8569
Bank of India	0.18	0.0185	0.9404	0.2130	0.3465
Barclays Bank of Kenya Ltd	0.11	0.1261	0.9455	0.2347	0.9041
CFC Stanbic Bank Ltd.	0.12	0.0943	0.9740	0.1142	0.9626
Chase Bank (K) Ltd.	0.09	0.0773	0.9701	0.1717	0.7607
Citibank N.A Kenya	0.15	0.0337	0.9427	0.2449	0.8285
Commercial Bank of Africa	0.16	0.2715	0.9396	0.1334	0.9030
Consolidated Bank of Kenya	0.13	0.1874	0.8320	0.4488	0.8134
Co-operative Bank of Kenya	0.18	0.0910	0.6219	0.1349	0.5409
Credit Bank Ltd.	0.12	0.1378	0.8230	0.1276	0.8617
Development Bank of Kenya	0.13	0.2627	0.9124	0.1356	0.9671
Diamond Trust Bank Kenya	0.16	0.2211	0.8921	0.2150	0.7012
Dubai Bank Kenya Ltd.	0.18	0.2150	0.9461	0.1176	0.8094
Ecobank Kenya Ltd	0.13	0.0919	0.9223	0.1350	0.7697
Equatorial Commercial Bank	0.11	0.1862	0.9685	0.1995	0.7786
Equity Bank Ltd.	0.15	0.1245	0.8772	0.1221	0.7163
Family Bank Ltd	0.15	0.2419	0.9368	0.1673	0.7039
Fidelity Commercial Bank Ltd	0.14	0.0527	0.5598	0.1156	0.8972
Fina Bank Ltd	0.12	0.1236	0.9222	0.1826	0.8696
First Community Bank Ltd	0.15	0.0715	0.9689	0.1133	0.9423
Giro Commercial Bank Ltd.	0.19	0.1009	0.9666	0.1135	0.7620
Guardian Bank Ltd	0.17	0.0493	0.9336	0.1192	0.6233

Gulf African Bank Limited	0.18	0.2175	0.9326	0.1068	0.9179
Habib Bank A.G Zurich	0.15	0.2358	0.7133	0.1641	0.7470
I & M Bank Ltd	0.18	0.0912	0.8339	0.1388	0.6123
Jamii Bora Bank Limited.	0.19	0.2020	0.9045	0.1717	0.9033
Kenya Commercial Bank Ltd	0.19	0.2246	0.8714	0.1658	0.6293
K-Rep Bank Ltd	0.16	0.0715	0.9689	0.1133	0.9423
Middle East Bank(K) Ltd	0.15	0.1009	0.9666	0.1635	0.7620
National Bank of Kenya Ltd	0.14	0.0493	0.9336	0.1192	0.7133
NIC Bank Ltd	0.19	0.2175	0.9326	0.1068	0.6979
Oriental Commercial Bank Ltd	0.13	0.2358	0.7133	0.1641	0.7470
Paramount Universal Bank Ltd	0.16	0.0812	0.5871	0.1866	0.5317
Prime Bank Ltd	0.12	0.0912	0.8339	0.1188	0.6123
Standard Chartered Bank Kenya	0.17	0.2747	0.9527	0.1391	0.7587
Trans-National Bank Ltd	0.15	0.0593	0.8498	0.1012	0.8481
UBA Kenya Bank Ltd	0.19	0.1669	0.8081	0.1491	0.8776
Victoria Commercial Bank Ltd	0.17	0.1839	0.8062	0.1562	0.9962
Housing Finance Ltd	0.19	0.1183	0.8202	0.1512	0.7925

Appendix IV : List of Commercial Banks in Kenya as at 2019

1. African Banking Corporation Ltd.
2. Bank of Africa Kenya Ltd.
3. Bank of Baroda(K) Ltd.
4. Bank of India
5. Barclays Bank of Kenya Ltd
6. CFC Stanbic Bank Ltd.
7. Chase Bank(K) Ltd.
8. Citibank N.A Kenya
9. Commercial Bank of Africa Ltd.
10. Consolidated Bank of Kenya Ltd.
11. Co-operative Bank of Kenya Ltd.
12. Credit Bank Ltd.
13. Development Bank of Kenya Ltd.
14. Diamond Trust Bank Kenya
15. Dubai Bank Kenya Ltd.
16. Ecobank Kenya Ltd
17. Equatorial Commercial Bank Ltd.
18. Equity Bank Ltd.
19. Family Bank Limited
20. Fidelity Commercial Bank Ltd
21. Fina Bank Ltd
22. First Community Bank Limited

23. Giro Commercial Bank Ltd.
24. Guardian Bank Ltd
25. Gulf African Bank Ltd
26. Habib Bank A.G Zurich
27. Imperial Bank Ltd
28. I & M Bank Ltd
29. Jamii Bora Bank Limited.
30. Kenya Commercial Bank Ltd
31. K-Rep Bank Ltd
32. Middle East bank(K) Ltd
33. National Bank of Kenya Ltd
34. NIC Bank Ltd
35. Oriental Commercial Bank Ltd
36. Paramount Universal Bank Ltd
37. Prime Bank Ltd
38. Standard Chartered Bank Kenya Ltd
39. Trans-National Bank Ltd
40. UBA Kenya Bank Limited
41. Victoria Commercial Bank Ltd
42. Housing Finance Ltd

Source, Central Bank of Kenya (2019)