EFFECTS OF MOBILE BASED LOANS ON OPERATIONAL PERFORMANCE OF SELECTED COMMERCIAL BANKS IN KENYA

BY

SAITAGA FREDRICK MOPIA

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DECLARATION

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

Signature…… Date ……

SAITAGA FREDRICK MOPIA

D63/9650/2018

This project has been submitted for examination with my approval as the University Supervisor

Signature…… Date ……

MR. MARTIN ODIPO

DEDICATION

This study is dedicated to my precious parents, Mr. and Mrs. Ole Sotian, who through illiterate took me through school, and to my sister Catherine and my brothers Moses, Ben, Sammy, Simeon and Kelvin for giving me a purpose for living and pursuing my studies.

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Glory is to The Almighty God for giving me wholesome life, strength and patience throughout my studies.

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ABBREVIATIONS AND ACRONMYS

CBK: Central Bank of Kenya

ROA: Return on Assets

ROE: Return on Equity

ROI: Return on Investment

SPSS: Statistical Package of Social Sciences

VIF: Variance of Inflation Factor

ABSTRACT

The banking sector in Kenya is dynamic characterized by stiff competition through entry of other digital lending platforms like Tala and Branch, the changes in the needs of the customers and advancement in technology. Banks are now faced with a challenge of how best to meet or exceed the needs and expectations of their customers given the fact that other new industry participants are now offering credit facilities tailored to the needs of their customers in a timely manner without need for collaterals. Survival in such an environment therefore requires that commercial banks adopt mobile based lending. The study sought to determine then influence of mobile based loans on operational performance of commercial banks. The study was further supported by the following specific objectives: to determine the effect of the quality of mobile based loans on operational performance of selected commercial banks in Kenya, to assess the effect of the quality of non-performing mobile based loans on operational performance of selected commercial banks in Kenya and to establish the effect of firm size and human capital in the relationship between mobile based loans on operational performance of selected commercial banks in Kenya. The study adopted a adopted a correlational design. The target population comprised of 42 commercial banks and census was used. Secondary data was collected in the study over a period from 2014 to 2018. The collected data was analyzed using SPSS by means, standard deviations and regression analysis. The study established that the quality of mobile based loans, quality of mobile based non-performing loans; firms' size and human capital all have significant effect on operational performance. The study concludes that mobile base loans have significant effect on operational performance. The study recommends that the management team of all commercial banks should significantly invest in mobile based lending platforms including development of Applications (Apps) so that more loan transactions are carried over the mobile phone and thus significant improvement in operational performance. Commercial banks should enhance the monitoring and appraisal systems before issuing loans to customers through the mobile phones. The Central Bank of Kenya (CBK) should formulate sound regulations and guidelines that would safeguard commercial banks from loose of cash through non performing mobile based loans that customers access through their mobile phones. Senior management team of commercial banks in Kenya should invest resources in growing the asset base and hiring more competent and qualified employees as these are key variables that positively enhance operational performance of any banking institution.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Mobile based lending has attracted attention among scholars and academicians across the world because it has been directly linked financial performance through improved profitability. Mobile based loans have turned out a critical alternative source of revenue that is key driver of financial performance in most organizations today. In their simplest form, customers access mobile phones over their mobile phones which are cost effective and convenient to the customer's side as they need not to visit the physical branch (Ngaruiya, 2014).The increased adoption of mobile based lending among customers and firms is from the fact that such channels do not require paper work, they are customized to the specific needs of the customers such that lending can be as a low as Kshs. 50. The rapid changes in technology and forces of globalization have also played an important role as drivers of mobile based lending adoption for improved financial performance. The increased forces of competition and constantly changing customer needs and preferences have also played an important role towards adoption of mobile based lending with the aim of improving financial performance (Kithaka, 2014).

The connection between mobile based lending and financial performance can be well modeled through the technology acceptance model (TAM) theory and the theory of financial intermediation theory. The TAM theory (Davis, 1986) gives an explanation of the critical elements that shape and determine the ability of the entity to adopt new forms of technologies. According to this theory, perceived usefulness and perceived ease of use are the key factors that determine adoption of technology in an organization. Adoption of mobile based lending is a form of technology and thus the theory determines factors influencing adoption of mobile based

lending as forms of these technologies. When employees have perceptions that the adoption of mobile based lending would be beneficial to an organization, its acceptance would be easier and thus financial performance. The theory of financial intermediation was advanced by Shaw, Enthoven and Gurley (1960) and it generally argues that financial entities play an intermediation role between the deficit and the surplus units of financial resources in an economy. Thus, the use of mobile based lending is predicted to strengthen the intermediation role of financial institutions hence improved financial performance. Based on these two theories, a positive relationship is therefore predicted and anticipated between mobile based lending and financial performance.

Commercial banks in Kenya operate in an increasing turbulent and dynamic environment that is so competitive. Most of the competitors of commercial banks include the Micro-finance institutions and deposit taking SACCOs and other digital lending platforms including Tala, Branch and Zenka among others. In particular, the financial sector in Kenya has seen a surge in the number of digital lending platforms that offer flexible credit facilities that are tailored to suit the needs of customers. In response to these changes and the challenges posed by their environment, some Kenyan banking entities have resorted to invest and adopt mobile based lending channels in order to remain competitive and improve on their performance. This has seen emergence of products like Kenya Commercial Bank (KCB) Mpesa for the KCB Bank, Equittel for Equity Group, Timiza for Barclays Bank, HF Whizz for Housing Finance Corporation (HFC) Bank, M-shwari for Commercial Bank of Africa among others. Most of the mobile lending among commercial banks is offered by the banking institution in collaboration with telecommunication companies like Safaricom, Airtel and Telecom as each of these firms have money transfer services (CBK, 2018). It is against this back born that the current study seeks to

determine how the emergence of mobile based lending among commercial banks has affected their financial performance.

1.1.1 Mobile Based Loans

Disbursing loan facilities is one the main functions of commercial banks in any economic system across the world. Disbursal of loans to clients by lending entities is informed by a number of factors including the amount of loan to be disbursed, the interest rate applicable to the loan taken, requirement for collaterals, the purpose of the loan and its form whether secured or unsecured (Muisyo, Alala&, Musiega, 2014).Mobile based loans are credit facilities that customers access through their mobile phones. Ngumi (2014) defines mobile based loans as credit facilities whose application and approval by the financial institutions is done over the mobile phones of the customers. Thus, with mobile based loans, a customer can access loan facilities without necessarily visiting the physical branch of the bank or filling the manual paper work. In mobile based loans, the mobile phones of the customers only act as a medium which the transactions are carried out in. The key driver of success of the mobile based lending model among commercial banks include the increased penetration and coverage of mobile money transfer services like M-pesa, Equitel, T-Cash and Airtel Money (Dvouletý, 2017).

Most leading commercial banks have now partnered with money transfer services firms like Safaricom to offer mobile based lending to their customers who have Safaricom lines. A good example is the Kenya Commercial Bank and CBA Bank through their partnership with Safaricom to come up with KCB-Mpesa and M-swhari products respectively. Since inception and adoptions of mobile based lending model among commercial banks in Kenya, tremendous

growth has been registered in terms of the uptake of loans and customer base. For instance, after the inception of KBC-Mpesa, the Kenya Commercial Bank registered an increase in loans by 4,000,000new loan applications as compared to 200,00 new loans that the bank used to attain on an annual basis. Most of these borrowers (94%) used their mobile phones to access the loan facilities (Hoover, 2016). M-Shwari, the product of CBA bank in collaboration with Mpesa of Safaricom was launched in early 2013. By the close of 2014, a total of 9.2 million savings accounts had been opened with a total of Kshs, 20.6 million loans having been disbursed to 2.8 million borrowers (FSD Africa, 2016).

Different measures have been adopted in measurement of mobile based loans for instance the volume of loans disbursed through mobile phones, total interest rate of the loan applicant measured through average lending rate, total transaction costs operationalized as average costs of transactions and liquidity which is determined by the overall mobile based loans divided by the total assets (Ross, 1998). According to Ghosh (2016), most commercial banks have adopted mobile based loans models so as to minimize operational costs in terms of paper work and time customers have to travel to the physical branch of the bank to make loan application.

1.1.2 Operational Performance

Performance is the general term that broadly refers to how well an organization meets the formulated goals and objectives within the stated time horizon. Performance measurement starts with formulation of goals at the start of a given year. At the end of a stated period, the formulated goals are compared with the actual ones (Tam & Oliveira, 2016). Whenever the formulated goals are above lower than the actual ones, this situation is described as performance.

On the contrary, under performance arises when the actual goals are below the formulated ones. Performance can be operationalized into financial as well as in non-financial terms. Financial performance quantifies the formulated goals of an organization and it covers measures like profitability, sales volume, and returns of assets, equity and investments that is ROA, ROE and ROI respectively (Ofori-Abebrese, Pickson& Opare, 2016).

In the banking sector, operational performance is usually measured by a number of indicators including the interest margins, the level of non-performing loans and net income. The Cyton Report (2017) points interesting figures on financial performance of the banking sector. For instance, the profit before tax of Barclays Bank experienced a reduction from Kshs. 12.07 billion in 2015 to Kshs. 10.85 billion in 2016. At the same time, the net profit of Equity Bank Group reduced by 5.9% from Kshs. 16.2 billion to Kshs. 15.2 billion for 2015 and 2016 respectively(Cyton Report, 2017). It is against this trend of financial performance of commercial that justifies the need for the current study.

1.1.3 Mobile Based Loans and Operational Performance

Studies on mobile based loans and financial performance do not offer conclusive evidence of the interaction between them. For instance, Wainaina (2017) in an assessment of the link between mobile based loan management practices and their influence on how commercial banks perform financially, a positive relationship was established between the mobile based measures (total number of loan applicants, total mobile loans amount and the control variables including interest rate, liquidity and capital adequacy) and financial performance.

David (2018) sought to determine how the process of mobile based lending influences the level of Non-Performing Loans (NPLs), it was documented that mobile based lending has positive influence on the level of NPLs. This can be inferred to mean that mobile based lending is inversely related to financial performance. According to RR, mobile based lending is a major factor of cost reduction in the financial sector which results into better performance. Some of the operational costs that mobile based lending is deemed to reduce include paper work on the banks' side and time saving on the customer's side.

1.1.4 Commercial Banks in Kenya

In Kenya, commercial banks operate in the larger banking industry that is highly regulated by the Central Bank of Kenya (CBK) through passing and formulation of relevant prudential guidelines and regulations. As of December 2017, there were 43 licensed commercial banks to operate in Kenya (CBK, 2018) and these banks are majorly recognized through a tier system of classification. Based on the market share, the CBK report (2017) indicate that the Kenya Commercial Bank is the largest with a market share of 14.4% followed by Cooperative Bank at 9.93% and Equity Bank at 9.85% in market shares respectively (CBK, 2017).

The banking sector in Kenya has faced a number of challenges that have directly impacted on their profitability. Some of these challenges include the changing regulatory environment, the rapid advancement in technology, the increasingly turbulent and challenging business environment necessitated by changing needs and preferences of their customers and the entry of other industry players creating a highly competitive environment. Some significant regulatory guidelines that affected profitability of commercial banks includes the proposal to increase the

cash reserve ratio and the interest rate capping regulation (Kamau&Oluoch, 2016).Thus, most commercial banks have resorted towards investment and adoption of mobile based loans for survival in the increasingly challenging banking sector.

For instance, Kenya Commercial Bank has the KCB-Mpesa, Equity Group has Equittel, Cooperative Bank of Kenya has the M-Coop Cash, Barclays Bank has Timiza and Housing Finance Corporation has HF-Whizz (CBK, 2017). These mobile based applications have significantly contributed to financial performance of the respective banks. For instance, as of December 2015, Equittel had planned to enroll about 5 million customers/users while KCB Mpesa had a target of enrolling 1.8 million customers over the same year (CBK, 2018). Between January and March of 2018, a total loan of Kshs. 8 billion had been disbursed to customers of KCB-Mpesa (KCB, 2018).

1.2 Research Problem

Mobile based loans is seen as key driver of cost efficiency through reduction in paper work and the time customers have to travel to physically visit the branch for loan application approval and disbursal. The increasingly turbulent environment characterized by rapid advancement in technology, the changing customer needs and an increase in competition have driven the adoption of mobile based loan models for better performance (Malak, 2014). Theoretically, a positive relation is expected between mobile based loans and financial performance. Unlike traditionally when collaterals were required in any loan application made by customers, the emergence of mobile based loan models has changed and transformed the need for customers to pledge collaterals before loan disbursal is made (Malak, 2014).

The banking sector in Kenya is dynamic characterized by stiff competition through entry of other digital lending platforms like Tala and Branch, the changes in the needs of the customers and advancement in technology. Banks are now faced with a challenge of how best to meet or exceed the needs and expectations of their customers given the fact that other new industry participants are now offering credit facilities tailored to the needs of their customers in a timely manner without need for collaterals. Survival in such an environment therefore requires that commercial banks adopt mobile based lending. According to Bhutta (2014), without proper strategies of adopting mobile based lending models among commercial banks, most of them will end up losing their customers to their competitors which would adversely impact on their financial performance (Asongu, Batuo, Nwachukwu&Tchamyou, 2018).

Empirical evidence on the connection between mobile based loans and operational performance offer mixed and inconclusive results on how these variables interact with each other. On a global scale, Lumu (2017) assessed mobile money services and their influence on ability of the SMEs to perform and a positive interaction was identified. The study was done in Uganda and not in Kenya. Abbasi and Weigand (2017) studied the effect of digital financial services on performance of the firm and noted a positive relationship. The focus of this study was however on performance as a whole and not just operational performance and it looked at digital financial services and not specifically mobile based lending. This results into research gaps for the current study to fill.

Locally in Kenya, Wainaina (2017) assessed the link between mobile based loan management practices and their influence on how commercial banks perform financially, a positive relationship was established between the mobile based lending and financial performance. This study however looked at mobile based loan management practices and not just mobile based loans creating a conceptual gap. David (2018) sought to determine how the process of mobile based lending influences the level of Non-Performing Loans (NPLs), it was documented that mobile based lending has positive influence on the level of NPLs. The study however linked mobile based lending and NPLs and thus failed to cover ability of the firm to perform financially. Kinyanzui (2018) examined mobile credit and its influence on performance of the banks with reference to Kenyan commercial banks. The findings indicated that mobile credit has positive influence on firm's ability to perform in financial terms.

Thus, from the aforementioned studies, it evident that some of them focused on performance as a whole and not specifically operational performance, hence bringing about conceptual gaps. Other studies were carried out in different firms like SMEs and not specifically among commercial banks creating contextual gaps. Other studies were carried out different countries including Uganda and not in Kenya and this creates contextual gap. To fill these gaps, the current study sought answers to the following research question; what is the effect of mobile based loans on operational performance of selected commercial banks in Kenya?

1.3 Research Objective

The following were the study objectives:

1.3.1 General Objective

To determine the effect of mobile based loans on operational performance of selected commercial banks in Kenya.

1.3.2 Specific Objectives

i. To determine the effect of the quality of mobile based loans on operational performance of selected commercial banks in Kenya
ii. To assess the effect of the quality of non-performing mobile based loans on operational performance of selected commercial banks in Kenya
iii. To establish the effect of firm size and human capital in the relationship between mobile based loans on operational performance of selected commercial banks in Kenya

1.4 Research Hypotheses

H_1: The quality of mobile based loans has no significant effect on operational performance of selected commercial banks in Kenya

H_2: The quality of non-performing mobile based loans has no significant effect on operational performance of selected commercial banks in Kenya

H_3: Firm size and human capital have no significant effect in the relationship between mobile based loans on operational performance of selected commercial banks in Kenya

1.5 Value of the Study

The findings of the study would be important to the management and investors Kenyan banks, the regulatory bodies including CBK and future scholars and academicians. To the management team of banking entities, various policy recommendations would be generated with suggestions on how best implement mobile based lending for improved operational performance of their institutions. To investors, the study would demonstrate how best their approval of adoption of mobile based lending models would result into maximization of their wealth which is a key objective.

To regulators and policy makers including the Central Bank of Kenya, the study would recommend the best ways of formulating policies and guidelines on mobile based loans among commercial to better improve on their operational performance. The study would add to the existing literature about mobile based loans and operational performance. As such, future scholars and academicians would find it easy to carry out studies as this would act as a point of reference through literature review.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The review of literature is an important step as it gives the overall direction of the entire study. This chapter reviews relevant literature as far as mobile based loans and operational performance is concerned.

2.2 Theoretical Review

It is through the theoretical review that one is able to conduct compressive review and consideration of the theories that provide anchorage to the study. The review of theories is an important aspect of the literature review since it they provide the basis for the study. This study will be guided by the technology acceptance model theory and the theory of financial intermediation theory.

2.2.1 Technology Acceptance Model

This theory is an information system theory. It explains how technological based devises are accepted and used. This theory was developed by Davis (1989) to provide and explain the behavior of computer usage. The theory argues that if a computer user is presented with a new software package, there are factors that will guide them on how and when it's convenient to use it. There are other model that are used to explain this behavior but they are more complex that this theory. Technology acceptance model is simple and diverse as a model. This theory is also useful in providing an explanation on users attitude change together with social networking in prevention of cyber-crimes (Wu & Chen, 2017). The degrees at which an individual invest in

technologies depend on its usefulness and functionality. Its adaptation variations depend on reasoning and planned behavior to effectively examine the adaptation of information technology. It is perceived that TAM is very useful and its ease of usefulness depend on relevance in capturing its usage contexts (Abdullah & Ward, 2016).The intent of adopting information technology is a valid predictor of behavior of the user.

According to Ooi and Tan (2016), the variables to use are behavioral intention to use, Subjective norm, perceived usefulness, job pressure, and perceived ease of use, perceived expense and risk. According to Tarhini, Hone, Liu &Tarhini, (2017), study that was conducted on TAM used in mobile policies, the study concentrated on factors that affect office acceptance benefits and investigate factors that influence usage of mobile technology in public institutions. The study indicated that there are four main categories of officer acceptance factors. These factors include management style and cognitive, officer performance and usability. The evidences that were provide did not point out the versions of the TAM because they focused on user perspective which did not provide adequate information on broader organizational factors within implementation and social contexts of mobile policing.

The applicability of the theory to the context of the study was that it provides the basis of technological acceptance of this technology that the organization (commercial banks) and user in this case customer acceptability of the technology.

2.2.2 Financial Intermediation Theory

This theory was developed by Diamond in 1984. This theory provides an explanation on how banks act as an intermediary between users and borrowers. Banks therefore provide access,

financial utilization and diversification. According to Seven and Yetkiner, (2016), FIT explains the role that commercial banks play in bridging the gaps that is created between the surplus spending customers and deficit spending customers. Clark (2017) also noted that banking entities help in delegating monitoring by implementing effective policies that are adequate to monitor borrower's behavior. Through reduction of monitoring costs, banks acquire competitive age than their competitors in the market.

Abedifar, Hasan and Tarazi (2016) also provided an analysis on the position that bank play in ensuring that there is effective transformation of illiquid assets into liquid liabilities. Investors and depositors are also classified together through there characterized as being risk averse. This enables banks to time future opportunities. Banks are also given an opportunity prevent the investors from being locked into long-term illiquid investments high yield high return to future customers. Banks are able to create and supply financial products through intermediation and meet the need of every kind of customers. This also can to reality when the banks itself realizes that they can supply financial product to yield higher return which is inclusive of all cost. As a results banks as financial intermediaries finds a good reason for existence (Kassim, 2016). This therefore gives them a perfect market position to transact and acquire information on costs where they are missing.

This theory is therefore important to the study as it gives the role of commercial ion banks in ensuring that there is smooth flow of information between investors, the bank itself, and customers.

2.3 Determinants of Operational Performance of Commercial Banks

This section discusses the key items that shape banking entities ability to perform within a five year time horizon (2014-2018).

2.3.1 Mobile Lending

Banks in Kenya generate most of their revenues by advancing loans to customers at a cost usually referred to interest rate. The rapid change in technology has enabled most commercial banks to partner with telecommunication companies to offer mobile based loans top customers. Mobile lending is indeed a new innovation in the banking industry that that resulted into an enhancement of the generated revenues of the institutions. Mobile loans are unique since they are customized to the needs of the customer (Liberty &Bacastow, 2014).Such kind of loans is able to meet the needs of the poor rural individuals with even without bank accounts provided they have the mobile phones. Mobile lending has been operationalized differently including the volume of loan transactions moved through the mobile phones, the number of customers accessing loans through their mobile phones, mobile take as a percentage of the GDP among other measures. Based on these arguments, a positive relationship is therefore predicted between mobile lending and operational performance of the institution (Björkegren &Grissen, 2018).

2.3.2 Firm Size

It has been widely acknowledged that large firms are better off in terms of performance in comparison to smaller firms (Vithessonthi &Tongurai, 2015). The reason put forward for this notion is that large firms are able to access the economies of scale for instance trade discounts,

greater expertise and raw materials required in provision of goods. The size of the firm can be determined using a number of measures including the number of employees, the value of assets and the sales revenues(Moeller, Schlingemann &Stulz, 2004).A study was carried out in Kenya by Muhindi and Ngaba (2018) to determine the interaction between size and bank performance in financial terms. A significant link was established between the size and financial performance of banks.

2.3.3 Human Capital

Human capital describes the skills and competence of employees in an organization that are required in carrying out the operations of the firm. The most important aspect of human capital is the number of employees working in an organization. Employees of commercial banks are responsible for selling of the products to customers that generate revenues especially the sales force. Thus, availability of motivated and skilled labor force in the bank is critical in sustaining overall performance of the banking institution. Perera, and Thrikawala (2012) analyzed the link that is brought about by human capital and the firm's ability to perform. It was documented that an entity that largely invests in human capital has greater chances of boosting its ability to perform. In Europe, Santos, Pereira and Cranfield (2013) revealed a positive interaction between human capital and firm's ability to perform.

2.4 Conceptual Framework

Figure 2.2 is the study's conceptual framework clearly showing the variables and how they interrelate with each other.

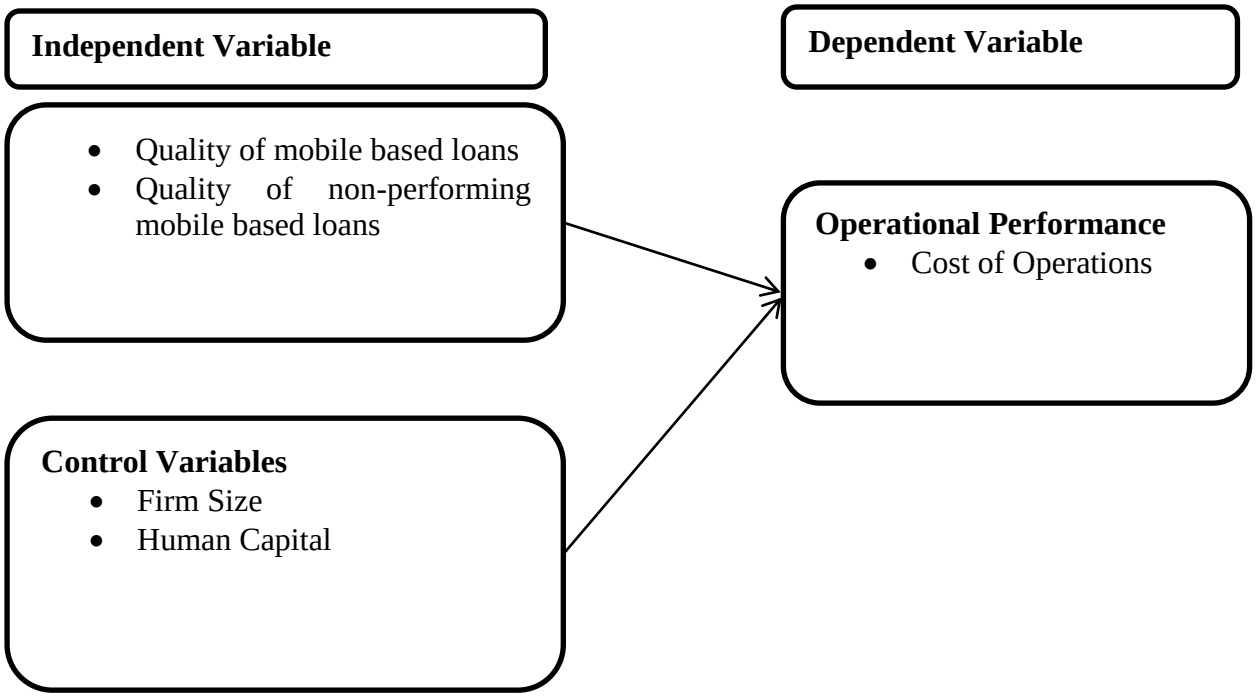

Figure 2.1: Conceptual Framework

Source; Author (2019)

2.5 Empirical Literature Review

Mobile phone usage in financial services has increased recently. This is basically because mobile phones are now accessed by majority of individual. A study conducted by Björkegren and Grissen (2018) on systems used by commercial banks to process there transaction in the US. The study targeted commercial banks in the north Illinois state in America. The study demonstrated that at the average number of product holdings which includes credit cards usage, mortgages, loans and certificates of deposit increased tremendously after customers have accepted used of mobile phones in their operation at a technology itself. The study also identified that the used of this mobile technology has led to increase in the number of transaction and product holdings. Banks that uses mobile bankers operation makes more income in terms of revenue than branch

only customers lending banks. The study concluded that clients using mobile banking services are less likely to leave their banks.

Shenoy and Williams (2017) gave consideration of the effect of scoring on customer lending. The study concentrated on credit scoring system which is used to add value to the loans. Both secondary and primary data were collected and used. Structured questionnaires were used which the respondents were required to answer using Likert scale. The study identified that there is exceptionally solid impact of scoring on the general performance and productivity of the firm. The sturdy also identified that there was expansion of 600 dollars for lesser-risk applicants and 546 dollars for medium-risk applicants. The study therefore concluded that there was a slight reduction in productivity for high risks per application, mirroring the exchanges in this class had been gainful before the appearance of credit scoring.

Xiong, Skitmore, Xia, Ballesteros-Pérez, Ye and Zhang (2019) looked at credit scoring models and their interaction with financial performance. It concentrated on how of credit scoring models effect the financial management of banks finances. It was recognized that the effectiveness of organizations comes down to the effectiveness of credit scoring models and finances, which is the concern of many managers and the management of finances is an issue which is fundamental to bank performance. It was indicated that credit scoring models is significant in financial management. Their usage can build the proficiency and precision of credit giving. Specifically they may lead to a decline in the risk premium required by financial institutions, prompting less expensive credit.

Ooi and Tan (2016) was keen to bring out the interaction between technologies and credit performance. Essentially, the study focused on computerized systems of credit score and its link on management of credit risk. The design was descriptive and it was noted that computerized credit scoring systems significantly yield extensive credit approval rates which extend to the banks credit defaults. The study recorded that credit scoring was correlated default rates. The study also identified that reducing expenses on computerized small-entity lending systems would increase performance and profitability of the lenders. This therefore offers motivation to the lender to extend even more uncertain loans. At the same time, lender-borrower distance significantly affects rates of default among non-credit scoring institutions. The study recommended that scoring models and technology such as mobile app to be used effectively to help in alleviate the data issues related with geologically inaccessible borrowers.

Björkegren and Grissen (2018) investigated effect of mobile usage on credit repayment. The study acknowledged that mobile usage is paramount in creating trust and confidence to key stakeholder and customers especially in banking sector and in keeping them satisfied with the services provided. The investigation focused on Caribbean country. The study revealed that mobile phones can be used to predict the behaviors and anticipate default of the borrowers without actual financial record being taken. The study identified that information gathered is important even into the current used screening methods which mostly depend on lesser information gathered for person. The information that is drawn may be serves as a point of reference and complement to the current techniques used by the bank. If this information is applied without interference could allow introduction of new lending method. However the

system could be subject to manipulation by individual who knows algorithm it is therefore important to used systems that are more secure.

Vekya (2017) conducted a study on factors that are affecting credit repayment. The study concentrated on the impact that mobile phone has on loan repayment. The study was conducted in Kenyan micro-financial institution. The study identified that young people are more prone to default and applied for small loans that old people. The study identified that there is low cases of default in post-education level compared to individual in the secondary level of study. The study also identified that business that has been in operation for more that13 years are less pruned to default and have heavily invested in technological transaction to help boost their loan performance. The study further stated that there are different factor that affect implementation of non-repayment of credit which incorporates the inherent qualities of borrowers and their organizations. The study concluded that mobile loan accessibility increases loan performance. Therefore the study recommended that effective measures to be put in place to monitor, control default and help in increasing information to the customers.

Kibet and Sile (2017) assessed how automated platforms can be used to increase quality of financial services. The design used was cross-sectional research design and it was concluded that mobile banking and introduction of automated teller machines is more popular in financial institutions in Kenya. The study identified that some dimensions are more important that others and given different priorities among these financial institutions and customers though all automated and mobile service are implemented for quality and increase customer loyalty. When customers want to decide on what service to use they look at accessibility, efficiency, reliability and security. Some consider personalization and ease of use not as much important. The study

concluded that when using mobile banking platforms accessibility, efficiency, reliability and security are important. Mora and Prior (2018) conducted a study on how mobile based banking have impacted performance. The study concentrated on how profitability of commercial bank in Kenya has been impacted by introduction of mobile based banking. The study employed an exploratory research design and confirmatory factor analysis. It was concluded that macro-economic factors significantly affect foreign exchange rates and performance of financial institutions.

Githii and Mwangi (2018) investigated effect that internet and mobile based banking has on ability of Kenyan banking entities to generate profits. The design adopted was descriptive. Information was gathered from primary sources specifically with aid of questionnaires. It was shown that Kenyan banks have recorded an increase in the revenues generated from mobile and internet banking operations. This is because of increased technological innovation that has expended use of phones among clients. The study also indicated that internet banking earnings and mobile banking significantly influenced by profitability of commercial banks which intern increases revenue collection.

2.6 Summary of Literature and Research Gaps

The summary of the reviewed literature with the research gap is shown in Table 2.1.

Table 2.1: Summary of Literature and Research Gaps

Author	Study	Methodology	Key Findings	Research Gap
Xiong et al. (2019)	Credit scoring models and their interaction with firm's ability to perform financially	Mixed research design	Credit scoring results into a decline in the risk premium required by financial institutions	The study was done in China and not in Kenya
Björkegren and Grissen (2018)	Effect of mobile usage on credit repayment	Adopted a descriptive research design	Mobile phones can be used to predict the behaviors and anticipate default of the borrowers	The study focused on Caribbean countries and not in Kenya
Githii and Mwangi (2018)	Effect that internet and mobile based banking has on ability of banking entities to remain profitable enough	The adopted design was descriptive	There has been quite an increment in the mobile banking income	The study looked at profitability which is merely an aspect of operational performance
Mora and Prior (2018)	How mobile based banking have impacted performance	Exploratory research design	Mobile banking predicts banking ability to perform	It failed to cover operational performance
Kibet and Sile (2017)	How automated platforms can be used to increase quality of financial services	Cross-sectional research design was used	Mobile banking and introduction of automated teller machines is more popular in Kenyan financial entities	More emphasis was placed on service quality and not operational performance

Source; Author (2019)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter shall look at the methodologies that were adopted in effort to provided answers to the formulated questions. It specifically addresses the design that was adopted, the targeted respondents as well as how the views of these respondents were captured and processed.

3.2 Research Design

Research design refers to the general outline or structure that shapes how a study is to be carried out. A research design determines the methods of collection as well as analysis of data. The study adopted a correlational design. Correlational design is also called a causal or a hypothesis testing design and it is ideal in studies seeking to bring out the cause and effect interaction between the variables of interest (Yin, 2017). This design was used in testing of the formulated hypotheses. Correlational design was ideal in determining the cause effect interaction between mobile based loans and the ability of some selected banking entities to enhance their operational performance. A number of studies have used correlational design, for instance, Wataka (2018) in an assessment of how private asset financing affects the ability of the real estate to perform, a correlational design was used.

3.3 Population and Sample Size

Any groups of items or events that have common features are largely referred to as the population (Yin, 2015). The study targeted 44 commercial banks (CBK, 2018) consider appendix I. Sample size is a representative elements of the entire population which is to be included in the

study. Sampling is required whenever the population is large enough. Sampling is important because it helps in reduction of costs of getting information from a larger population. All the 44 banking entities were censured by the study, since they were small for carrying out sampling.

3.4 Data Collection

The study collected secondary data because it is readily available from the financial statements of respective banks, relevant publications by the CBK, publications by the Financial Sector Deepening (FSD) that cover the uptake of mobile credits, the publications by the Kenya Bureau of Statistics (KNBS) as well as past relevant thesis projects. Secondary data was collected on net income, total assets, mobile based loans transactions and users of mobile based loans. The study collected annual data as financial statements for banks are usually prepared on an annual basis. Collection of secondary data was important in saving time that facilitated completion of the study in line with the established schedule. The study formulated data collection sheets for sake of gathering secondary information (Appendix II). The study collected secondary data on a five year time horizon (2014-2018). The period was selected because it was most current and a number of innovations among commercial banks with regard to mobile based loans have majorly covered this period.

3.5 Data Analysis

Once data has been collected, cleaning was conducted besides editing and formatting. Once cleaned, the complete data was entered into SPSS tool where the analysis started with the use of means, standard deviations and regression analysis.

3.5.1 Model Specification

The adopted regression model took the following form;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu it$$

Whereby

β_0=constant and $\beta_{1...n}$ beta coefficients

Y = Operational Performance (Cost of Operations=Operating Costs/Total Costs)

X_1 =Quality of mobile based loans (Mobile loans/Total Loan Book)

X_2= Quality of non-performing mobile based loans (Non-Performing Mobile Loans/Total Mobile Loans)

X_3= Firm Size (Total Assets)

X_4=Human Capital (measured by the total number of employees)

μit= Error Term

3.5.2 Diagnostic Tests

Diagnostic tests were carried out so as to ensure that regression assumptions have not been in violation by the study. Specifically, the diagnostic tests that were conducted by the study included Heteroscedasticity, autocorrelation, multicollinearity as well as normality tests.

The need for conducting normality test was to check and ascertain if the observations in the data set obey a normal distribution. Usually, in a normal distribution, there is a mean value of 0 as well as standard deviation of 1 (Xie, Hong, Laing & Kang, 2017). This test was established by relying on values of Skewness and Kurtosis, where normally distributed observations are believed to have these values ranging from + or-2.

Multicollineairty is said to be present in the data set whenever one of the study independent variables have high correlation with each other (Katrutsa &Strijov, 2017). In ascertaining for multicollinearity in the data set, the study relied on Variance of Inflation Factor (VIF) values. To infer the absence of multicollinearity in the data set, the VIF values should be within the range of 1 all through to 10 (Vatcheva, Lee, McCormick & Rahbar, 2016).

Autocorrelation arises from how one or more values correlate with each other in reference to various point of time (Giles & Beattie, 2018). In this study, the values of Durbin Watson Statistics helped in checking for autocorrelation. As a rule of thumb, the value near 2 shows that autocorrelation is not a challenge (Rho&Vogelsang, 2018).

Heteroscedasticity is where the spread of the residual or the error term of the model varies within a range of different measured values (Baum & Lewbel, 2018). Scatter plots were useful in establishing this phenomenon. The interpretation of these scatter plots is such that where the observations are spread without absence of a clearly observed trend or pattern could signify absence of heteroscedasticity condition (Chasco, Le-Gallo & López, 2018).

3.5.3 Significance Tests

The overall regression model was determined using F-test and the values of the coefficient of determination. In use of F-test, the value of F calculated in the Analysis of Variance Table was compared with the value of F critical that was read from the F distribution Table using appropriate degrees of freedom. To infer that the model is significant, the value of F calculated should always be greater than F critical. Similarly, values of R square above 0.6% will show that the overall model of the study is fit. F-test is usually used where there is equal variance between

two populations. This is in contrast to t-test that is used when means of two populations are same or equal.

The significance of each individual variables of the study was determined by their respective p-values. In this regard, p-values less than 0.05 indicated that the variables are significant. Testing of hypothesis will also be conducted at 5% level of significance. In this regard, $p<0.05$ resulted into rejection of the formulated null hypotheses in favor of the alternative ones. In addition to the p-values, the t-test was also used where the t-values were compared with 1.96 to infer whether the relationship is significant or insignificant.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The chapter is set out to present the findings of the analysis on the secondary data that was collected. The period of consideration for the study was five years (2014-2018) and information was sought from six commercial banks that have adopted mobile based lending platforms. A breakdown of these commercial banks with mobile based lending platforms is provided in appendix III. The collected information was processed by editing and standardization with the help of Ms Excel. Once this has been completed, the clean edited information was entered into SPSS software. The descriptive and inferential statistics were conducted with the help of SPSS software. For trend analysis, the study used excel based on the established time frame that the study considered. The findings are as shown in subsequent sections.

4.2 Summary of Descriptive Statistics

Descriptive statistics were carried out with the help of SPSS software. These covered the means and standard deviations as well as the maximum and minimum values on the respective variables of the study. Consider Table 4.1.

Table 4.1: Summary of Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
Operational Performance (%)	30	.03	.88	.5289	.15856
Quality of Mobile Based Loans (%)	30	.04	.90	.2468	.31103
Quality of Non Performing Mobile Based Loans (%)	30	.03	.39	.0974	.08397
Firm Size (billions)	30	4.78	5.79	5.4091	.29168
Human Capital (thousands)	30	3.02	3.95	3.5459	.23609

Source: Research Data (2019)

From Table 4.1, the average operational performance in the banking industry is at 52.89% and the quality of mobile based loans among commercial banks stand at 24.68% and that 9.74% of the mobile based loans advanced by commercial banks in Kenya are Non-performing. Furthermore, on average, commercial banks have an asset base of Kshs. 5.4091 billion with about 3545 employees. The highest maximum value was represented by firm size at 5.79 with the least maximum value being represented by quality of non performing mobile based loans at 0.88. The highest minimum value was represented by firm size at 4.78 with the lowest minimum value being shown by operational performance and the quality of mobile based NPLs at 0.03 respectively. The highest value of standard deviation was shown by quality of mobile based loans at .31103 while the least value was shown by quality of non performing mobile based loans at .08397.

Various deductions can be drawn from the results in Table 4.1 above. First, in as much as commercial banks have invested in mobile based loans, a significant portion of these loans are non-performing. Most of these non performing mobile based loans end up being reported to credit reference systems. Secondly, it can be inferred that most of the commercial banks have a relatively large asset base hence larger in sizes. In other words, most of the banks that have adopted mobile based lending are classified as larger in sizes on the basis of their asset bases.

4.3 Trend Analysis of Study Variables

Trend analysis was conducted to display the movement in the variables of the study across the 5-yerar period of consideration.

4.3.1 Quality of Mobile Based Loans

Quality of mobile based loans was one of the variables used in the study. It was measured as a ratio of all mobile based loans divided by the total loan portfolio of each of the selected commercial banks. The trend analysis over the five year time period is shown in Figure 4.1.

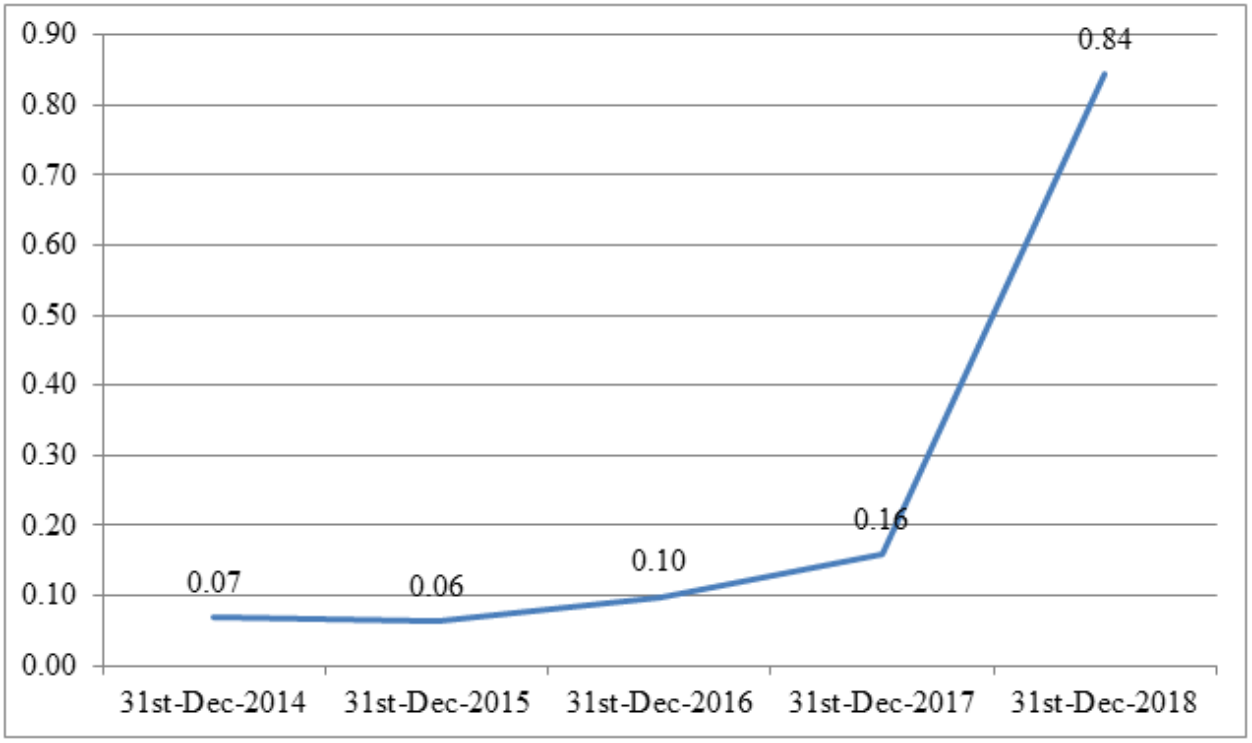

Figure 4.1: Quality of Mobile Based Loans

Source: Research Data (2019)

The trend analysis on the quality of mobile based loans is shown in Figure 4.1. From the findings, the quality of mobile based loans has generally been moving on an increasing trend across the study period. This shows that commercial banks have learnt the benefits of mobile based loans and thus have invested in such platforms so as to generate more revenues.

4.3.2 Quality of Mobile Based Non Performing Loans

The findings on the trend analysis of quality of mobile based non-performing loans are shown in Figure 4.2. To measure the quality of mobile based NPLs, the study used a ratio of total mobile based NPLs divide by the entire loan portfolio.

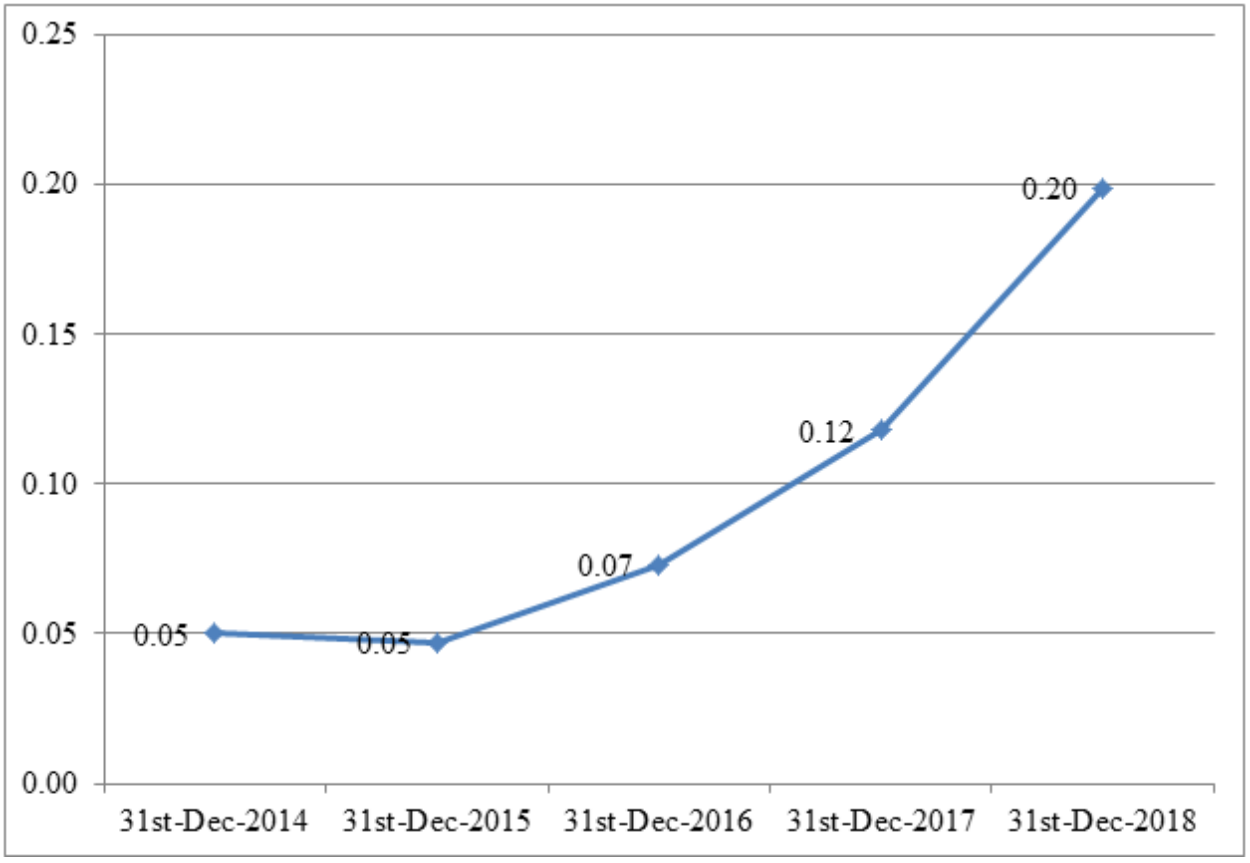

Figure 4.2: Quality of Mobile Based Non Performing Loans

Source: Research Data (2019)

The findings in Figure 4.2 indicate that on average, there has been an increase in the quality of mobile based non-performing loan among commercial banks. This shows that for every loan that commercial banks offer through mobile phones, a fraction of it ends up not being recovered.

4.3.3 Firm Size

Firm size was the control variable in the study. It was measured by taking the natural logarithm of all the asset base of the commercial banks. The findings on trend analysis are indicated in Figure 4.3.

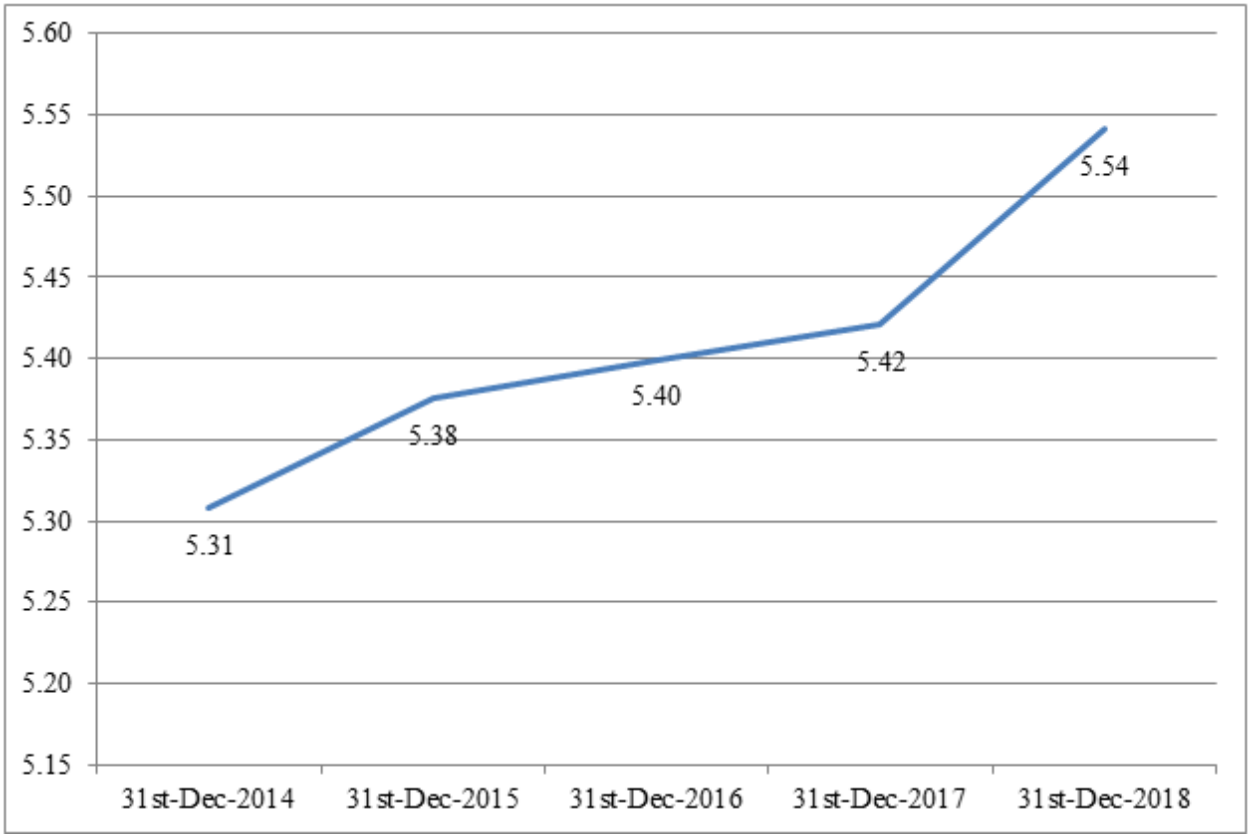

Figure 4.3: Firm Size

Source: Research Data (2019)

As indicated in Figure 4.3, there has generally been a rise in firm size across the study period. This shows that commercial banks have invested hugely in growth and expansion of their assets.

4.3.4 Human Capital

The findings of trend analysis on human capital of the studied banks are shown in Figure 4.4.

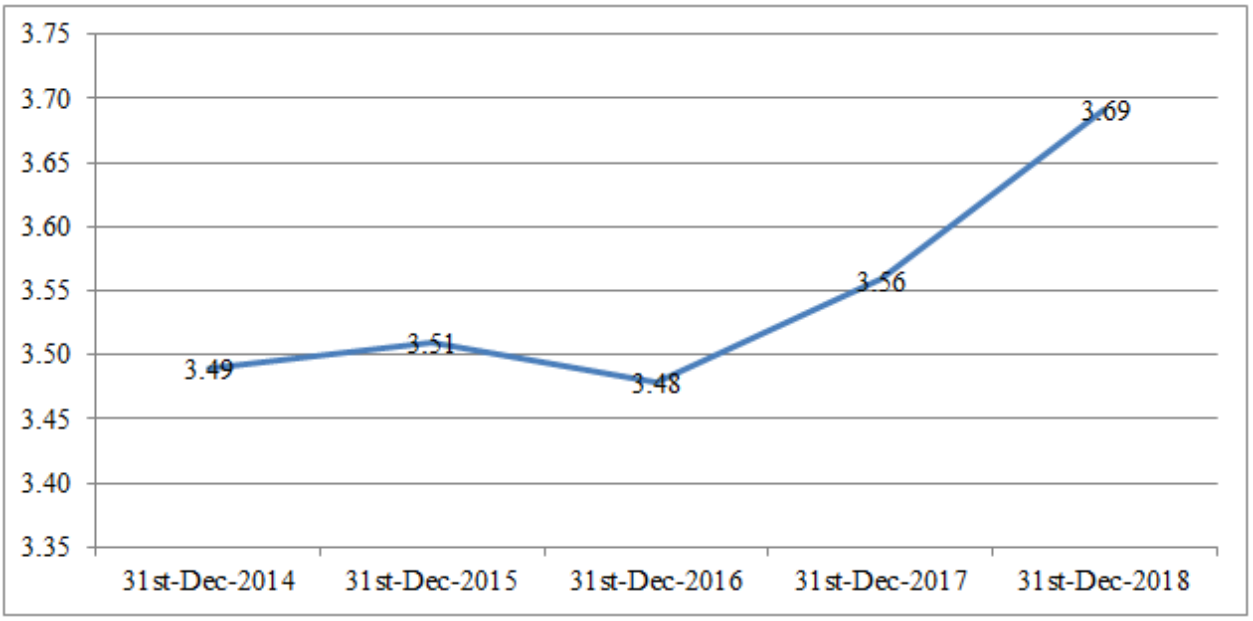

Figure 4.4: Trend Analysis on Human Capital

Source: Research Data (2019)

As shown in Figure 4.4, there has generally been an increasing trend in human capital among the studied banks. Therefore, in effort to improve on their operational performance, most commercial banks invested in human capital as depicted in Figure 4.4.

4.3.5 Operational Performance

Operational performance was the dependent variable of the study. The findings of the trend analysis are reported in Figure 4.5.

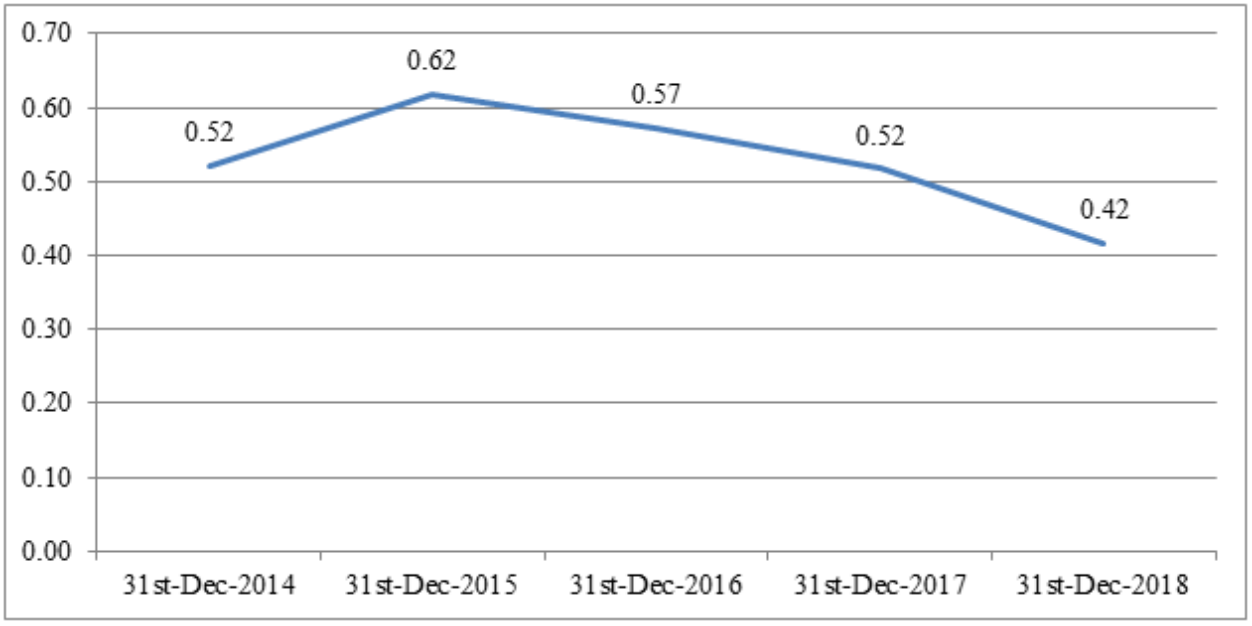

Figure 4.5: Trend Analysis of Operational Performance

Source: Research Data (2019)

As shown in Figure 4.5, there has been a drop in operational performance of the studied banks over the period of consideration. This trend in operational performance could be explained in terms of the quality of mobile based non-performing loans that the commercial banks advance to customers.

4.4 Diagnostic Tests

The study carried out diagnostic tests to determine whether the data set was suitable for carrying out inferential statistics. Specifically, the following tests were conducted: normality test, Linearity Test, the multicollinearity test, autocorrelation, and Heteroscedasticity Test.

4.4.1 Normality Test

The need for conducting normality test was to check and ascertain if the observations in the data set obey a normal distribution. Usually, in a normal distribution, there is a mean value of 0 as well as standard deviation of 1 (Xie, Hong, Laing & Kang, 2017). This test was established by relying on values of Skewness and Kurtosis, where normally distributed observations are believed to have these values ranging from + or-2.

Table 4.2: Skewness and Kurtosis

	N	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Std. Error
Operational Performance	30	-.543	.427	1.854	.833
Quality of Mobile Based Loans	30	1.465	.427	.362	.833
Quality of Non Performing Mobile Based Loans	30	1.096	.427	1.347	.833
Firm Size	30	-1.058	.427	.257	.833
Human Capital	30	-.752	.427	.330	.833

Source: Research Data (2019)

As indicated in Table 4.2, the values of Skewness and Kurtosis all fall within the acceptable range as suggested by Jöreskog, Olsson &Wallentin (2016). The inference drawn from this finding is that the data set was normally distributed. The above findings are further supported by the Histogram and Normal PP Plots shown below.

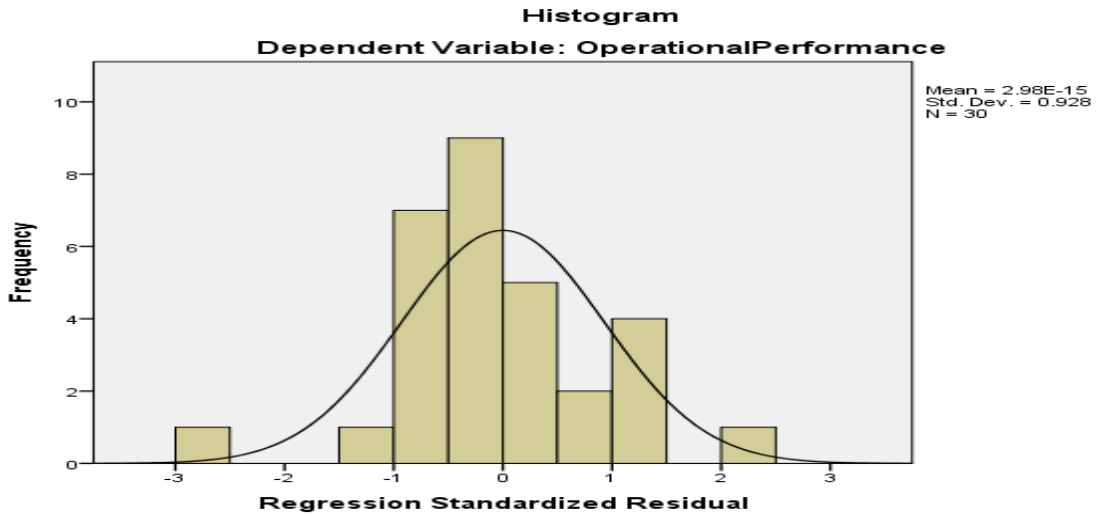

Figure 4.6: Histogram

Source: Research Data (2019)

The histogram above confirms that indeed, the data set used for the study was normally distributed.

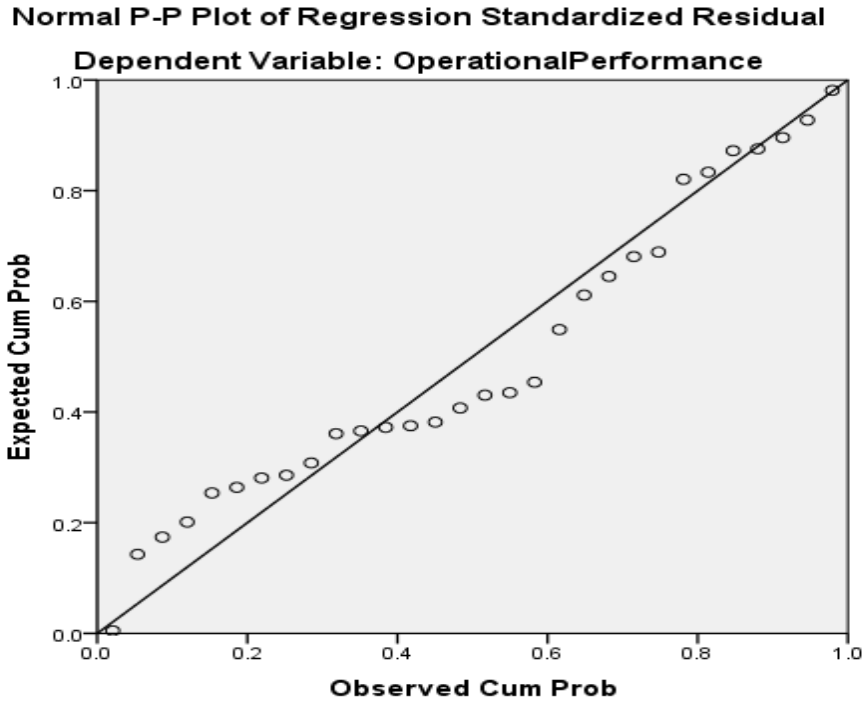

Figure 4.7: Normal PP Plot

Source: Research Data (2019)

The normal PP Plot has all the data points falling along the normal PP line. This can be inferred that the data set was normally distributed.

4.4.2 Multicollineairty Test

Multicollineairty is said to be present in the data set whenever one of the study independent variables have high correlation with each other (Katrutsa &Strijov, 2017). In ascertaining for multicollinearity in the data set, the study relied on Variance of Inflation Factor (VIF) values. To infer the absence of multicollinearity in the data set, the VIF values should be within the range of 1 all through to 10 (Vatcheva, Lee, McCormick & Rahbar, 2016).

Table 4.3: Multicollinearity Test

	Collinearity Statistics	
	Tolerance	**VIF**
Quality of Mobile Based Loans	.522	1.915
Quality of Non Performing Mobile Based Loans	.553	1.808
Firm Size	.701	1.426
Human Capital	.662	1.511

a. Dependent Variable: Operational Performance

Source: Research Data (2019)

Table 4.3 indicates that all VIF values are less 10; this signifies absence of multicollinearity in the data set. This finding is supported by Vatcheva et al. (2016).

4.4.3 Autocorrelation Test

Autocorrelation arises from how one or more values correlate with each other in reference to various point of time (Giles & Beattie, 2018). In this study, the values of Durbin Watson Statistics helped in checking for autocorrelation. As a rule of thumb, the value near 2 shows that autocorrelation is not a challenge (Rho&Vogelsang, 2018).

Table 4.4: Durbin Watson Statistic

Model	Durbin-Watson
1	2.359[a]

a. Predictors: (Constant), Human Capital, Quality of Non Performing Mobile Based Loans, Firm Size, Quality of Mobile Based Loans
b. Dependent Variable: Operational Performance

Source: Research Data (2019)

As indicated in Table 4.4, the value of Durbin Watson Statistic is 2.359; thus, the data was suitable for inferential analysis.

4.4.4 Heteroscedasticity Test.

Heteroscedasticityis where the spread of the residual or the error term of the model varies within a range of different measured values (Baum & Lewbel, 2018). Scatter plots were useful in establishing this phenomenon. The interpretation of these scatter plots is such that where the observations are spread without absence of a clearly observed trend or pattern could signify absence of heteroscedasticity condition (Chasco, Le-Gallo & López, 2018).

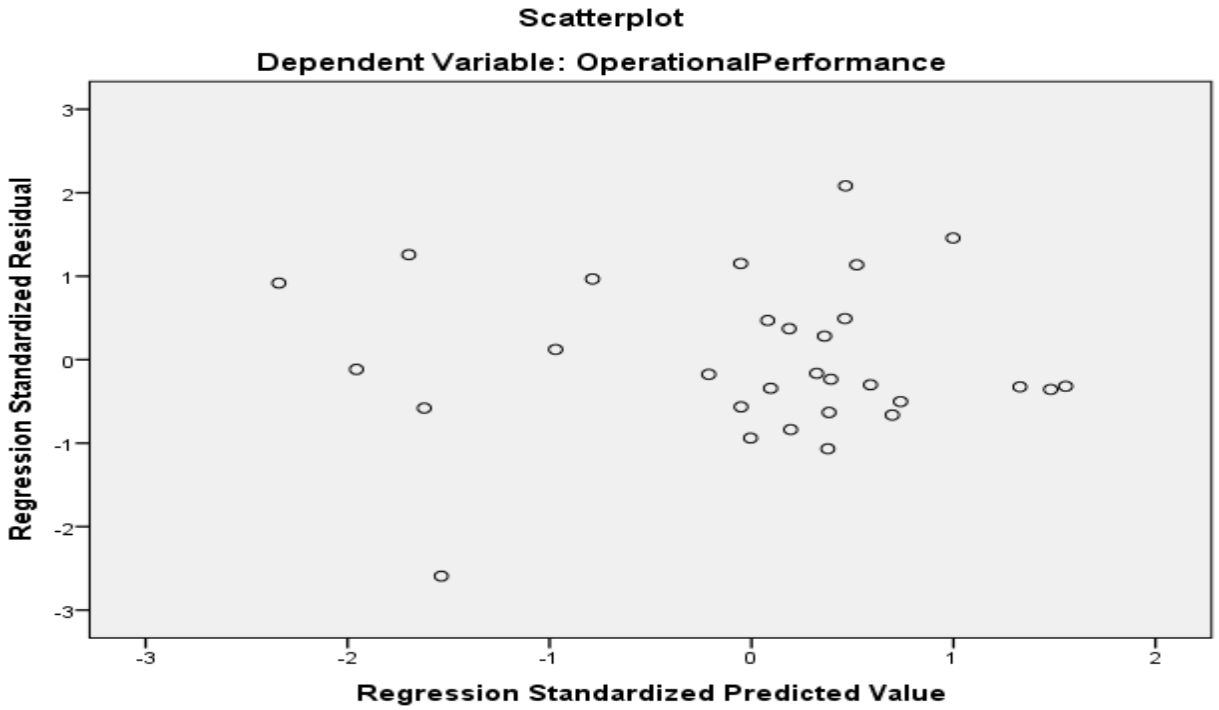

Figure 4.8: Scatter Plot

Source: Research Data (2019)

Figure 4.8 shows that all the data points in the scatter plots are spread all over and there is clear pattern that can be shown. This means that there was no heteroscedasticity in the data set.

4.5 Correlation Results

Correlation results are shown in Table 4.5.

Table 4.5: Correlation Results

		Operational Performance	Quality of Mobile Based Loans	Quality of NP Mobile Based Loans	Firm Size	Human Capital
Operational Performance	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	30				
Quality of Mobile Based Loans	Pearson Correlation	.342	1			
	Sig. (2-tailed)	.000				
	N	30	30			
Quality of Non Performing Mobile Based Loans	Pearson Correlation	-.257	.666**	1		
	Sig. (2-tailed)	.001	.000			
	N	30	30	30		
Firm Size	Pearson Correlation	.247	.153	.051	1	
	Sig. (2-tailed)	.000	.419	.791		
	N	30	30	30	30	
Human Capital	Pearson Correlation	.105	.284	.155	.545**	1
	Sig. (2-tailed)	.000	.129	.413	.002	
	N	30	30	30	30	30

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

Source: Research Data (2019)

As shown in Table 4.5, quality of mobile based loans (r=0.342) has a moderate interaction with operational performance. The quality of mobile based non-performing loans (r=-0.257) has an inverse moderate relationship with operational performance. At the same time, firm size (r=0.247) has positive relationship with operational performance. Human capital (r=0.105) has positive interaction with operational performance.

4.6 Regression Results and Hypotheses Testing

The subsequent sections detail the regression results

4.6.1 Analysis of Variance

Table 4.6 is the summary of the ANOVA results.

Table 4.6: Analysis of Variance

	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.549	4	0.137	17.596	.000[b]
Residual	0.195	25	0.007		
Total	**0.744**	**29**			

a. Dependent Variable: Operational Performance
b. Predictors: (Constant), Human Capital, Firm Size, Quality of Non Performing Mobile Based Loans, Quality of Mobile Based Loans

Source: Research Data (2019)

The finding of the ANOVA is shown in Table 4.6 above. From the findings, it is shown that the value of F calculated is 17.596 while F critical is 2.759, thus a significant study model was used.

4.6.2 Regression Coefficients and Significance

Table 4.7 give results on beta and the significance of the study variables.

Table 4.7: Regression Coefficients and Significance

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.151	.459		2.507	.019
Quality of Mobile Based Loans	.233	.108	.205	2.157	.000
Quality of Non Performing Mobile Based Loans	-.526	.208	.279	-2.531	.018
Firm Size	.313	.135	.224	2.319	.000
Human Capital	.479	.120	.716	3.990	.001

a. Dependent Variable: Operational Performance

Source: Research Data (2019)

Consider the following equation;

$$Y = 1.151 + .233X_1 - .526X_2 + .313X_3 + .479X_4 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (i)$$

Whereby

Y = Operational Performance (Cost of Operations=Operating Costs/Total Costs)

$\mathbf{X_1}$ =Quality of mobile based loans (Mobile loans/Total Loan Book)

$\mathbf{X_2}$= Quality of non-performing mobile based loans (Non-Performing Mobile Loans/Total Mobile Loans)

$\mathbf{X_3}$= Firm Size (Total Assets)

$\mathbf{X_4}$**=**Human Capital (measured by the total number of employees)

Thus, mobile based loans constant, operational performance among commercial banks would be at 1.151. A unit change in quality of mobile based loans other factors relaxed could result into 23.3% increase in operational performance. A unit change in quality of non-performing mobile based loans other factors kept constant would lead to 52.6% reduction in operational performance. A unit change in firm size holding other factors constant would lead to 31.3% increase in operational performance. A unit changes in human capital other factors kept constant would lead to 47.9% increase in operational performance. All the p-values are less than 0.05, showing that they were significant. Table 4.8 gives a summary of the tested hypotheses and the decisions.

Table 4.8: Summary of Hypotheses

Hypotheses	Correlation Results	Regression Results	Remarks
H_1: The quality of mobile based loans has no significant effect on operational performance of selected commercial banks in Kenya	.000	.000	Reject hypothesis
H_2: The quality of non-performing mobile based loans has no significant effect on operational performance of selected commercial banks in Kenya	0.001	.018	Reject hypothesis
H_3: Firm size and human capital have no significant effect in the relationship between mobile based loans on operational performance of selected commercial banks in Kenya	.000 & .000	.000 & .001	Reject hypothesis

Source; Research Data (2019)

4.6.3Model Summary

The findings on the regression model summary are shown in Table 4.9.

Table 4.9: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.859[a]	.738	.700	.05462

a. Predictors: (Constant), Human Capital, Firm Size, Quality of Non Performing Mobile Based Loans, Quality of Mobile Based Loans

Source: Research Data (2019)

Table 4.9 indicates that the value of R is 0.859; this shows that there exists a strong and positive correlation between mobile based loans and operational performance. R square is 0.738; hence the study model was good. The value adjusted R square is 0.700; showing that 70.0% change in operational performance of commercial banks is jointly explained by their mobile based loans and other control variables that study focused on.

4.7 Discussion of the Findings

The study established that the quality of mobile based loans has positive and significant effect on operational performance. Thus, an increase in mobile based loans results into an improvement in operational performance. The finding is in line with Mora and Prior (2018) who noted that

mobile banking effectively predicts the ability of firm's performance. Wainaina (2017) assessed the link between mobile based loan management practices and their influence on how commercial banks perform financially, a positive relationship was established between the mobile based lending and financial performance. Kinyanzui (2018) examined mobile credit and its influence on performance of the banks with reference to Kenyan commercial banks and the findings indicated that mobile credit has positive influence on financial performance.

The quality of non-performing mobile based loans has negative but significant effect on operational performance. Thus, this means that an increase in nonperforming mobile based loans reduces operational performance. The finding contradicts Lumu (2017) noted that mobile services of transferring money have significant influence on firm performance. Similarly, Abbasi and Weigand (2017) studied the effect of digital financial services on performance of the firm and noted a positive relationship. David (2018) documented that mobile based lending has positive influence on the level of NPLs. It was established that firm size and human capital positively and significantly influence operational performance. Thus, an increase in firm size brings about an improvement in operational performance. These findings are in line with Muhindi and Ngaba (2018) was of the view that larger banks perform better as compared to smaller ones.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The essence of this chapter is to summarize the findings of the analysis as informed by the objectives of the study. The summary of the key findings is used to make conclusions of the study. There is recommendation of the study as informed by the key findings and they have relevant implications on theory and practice. The chapter also contains the limitations and areas that further studies can be carried out.

5.2 Summary of the Findings

The broad aim of the study was to determine then influence of mobile based loans on operational performance. There were specific objectives that provided the basis for development and establishment of the study hypotheses. The study relied on secondary data as collected over a period of 5-years (2014-2018). A total of 6-banks that have invested in mobile based lending were sampled and covered by the study as presented on Appendix III. The collected data was analyzed to make inferences and deductions as summarized in subsequent sections.

The study was interested at establishing the effect of quality of mobile based loans on operational performance. From the findings of trend analysis, it was established that quality of mobile based loans has consistently been increasingly within the period that the study covered. Inferential statistics indicated that quality of mobile based loans significantly predicts the

operational performance of an entity. The quality of NPLs has positive effect on operational performance of commercial banks.

The findings of trend analysis indicated that there has generally been an increase in the quality of NP-mobile based loans among commercial banks. This trend has adversely resulted into a consistent decline in operational performance. The findings of inferential analysis indicated that the quality of non-performing mobile based loans has significant influence on operational performance. The quality of non-performing mobile based loans has an inverse relationship and effect on operational performance.

The last objective sought to test the controlling effect of firm size and human capital in the interaction between mobile based loans and operational performance. From the findings of the trend analysis, it was established that firm size has consistently been increasingly over the period of consideration. Similarly, human capital has also been consistently rising among Kenyan banks. It was established that firm size significantly predicts firm's operational performance. Firm size has positive effect on operational performance. Human capital significantly predicts operational performance. Human capital has positive effect on operational performance. Mobile based loans have significant effect on operational performance of banking entities.

5.3 Conclusion

The quality of mobile based loans significantly determines the level of operational performance of the banking entities. The quality of non-performing loans has positive effect on operational performance. The quality of mobile based loans has consistently been increasingly within the period that the study covered. Inferential statistics indicated that.

The quality of non-performing mobile based loans has significant influence on operational performance. The quality of non-performing mobile based loans has an inverse relationship and effect on operational performance. There has generally been an increase in the quality of non-performing mobile based loans among commercial banks. This trend has adversely resulted into a consistent decline in operational performance of commercial banks.

Firm size significantly predicts operational performance. The interaction between the size of the firm and the level of operational performance is positive. There exists a positive link between human capital and the level of operational performance of the firm. There exists a positive interaction between human capital and the operational performance of an entity. Mobile based loans significantly predict operational performance. Firm size has consistently been increasingly over the period of consideration. Human capital has also been consistently rising among commercial banks in Kenya.

5.4 Recommendations for Policy

It was shown that the quality of mobile based loans has positive effect on operational performance. Thus, the bank's senior management team should significantly invest in mobile based lending platforms including development of Applications (Apps) so that more loan transactions are carried over the mobile phone and thus significant improvement in operational performance.

Quality of non performing mobile based loans was found to have an inverse interaction with operational performance. Thus, banking entities should enhance the monitoring and appraisal systems before issuing loans to customers through the mobile phones. It is important that

commercial banks critically evaluate the credit history and credit worthiness of the customers before advancing credit to them over the mobile phones. Commercial banks should also partner with Credit Reference Bureaus (CRB) to report on customers who have failed to pay up their loans advanced through mobile based platforms. The Central Bank of Kenya (CBK) should formulate sound regulations and guidelines that would safeguard commercial banks from loose of cash through non performing mobile based loans that customers access through their mobile phones.

Firm size and human capital were found to have positive and significant effect on operational performance. Hence, senior managers of the banking entities in Kenya should invest resources in growing the asset base and hiring more competent and qualified employees as these are key variables that positively enhance operational performance of any banking institution.

5.5 Limitations of the Study

The current study was limited to mobile based loans and their influence on operational performance. The study covered 6 commercial banks that had implemented mobile based lending platforms. Information for the study was gathered from secondary sources with the aid of data collection sheets. The limitation of using secondary data stems from the fact that it represents the second hand source of information that may have been subjected to manipulation and inaccuracies. The study was limited to a five year period (2014-2018). The period was deemed to be effective because most commercial banks had implemented mobile based lending platforms within the same horizon.

5.6 Suggestions for Further Studies

It was shown that the adjusted R square is 0.700; hence 70.0% change in operational performance of banking entities is explained by their mobile based loans they give customers. Thus, apart from mobile loans, future studies should bring out other influential variables to the study. A recommendation is therefore give for further studies to be conducted in other firms within the financial sector like the deposit taking SACCOs as well as the micro fiancé institutions. Future studies should also consider the use of both primary as well as secondary sources of information.

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APPENDICES

APPENDIX I: LIST OF COMMERCIAL BANKS IN KENYA

1. African Banking Corporation ltd
2. Bank of Africa k Ltd
3. Bank of Baroda Kenya
4. Bank of India Ltd
5. Barclays Bank of K Ltd
6. Chase Bank Kenya Ltd
7. Citibank N.A.
8. City Finance Bank Ltd
9. Commercial Bank of Africa ltd
10. Consolidated bank
11. Co-operative Bank of Kenya
12. Credit Bank Ltd
13. Credit Finance C Bank Ltd
14. Development Bank of K
15. Diamond Trust Bank
16. Dubai Bank Ltd
17. Ecobank Kenya Limited
18. Equatorial Commercial Bank ltd
19. Equity Bank Limited
20. Family Finance Bank

21. Fidelity Commercial Bank Ltd

22. First Community Bank

23. Guaranty Trust Bank Ltd

24. Giro Commercial Bank

25. Guardian Bank Ltd

26. Habib Bank A.G Zurich

27. Habib Bank Ltd

28. Imperial Bank ltd

29. Investments and Mortgages

30. Jamii Bora Bank

31. Kenya Commercial Bank Ltd

32. K-Rep Bank ltd

33. Middle East Bank

34. National Bank of Kenya

35. National Industrial Credit Bank ltd

36. Oriental Commercial Bank Ltd

37. Paramount Universal Bank Ltd

38. Prime Bank ltd

39. South Credit Banking corporation

40. Stanbic Bank Kenya ltd

41. Standard Chartered Bank of Kenya

42. Trans-National Bank

43. United Bank of Africa

44. Victoria Commercial Bank Ltd

Source: Central Bank of Kenya (2017)

APPENDIX II: DATA COLLECTION SHEET

Year	Total Assets	Operating Costs	Total Costs	Mobile loans	Non Performing Mobile Loans	Total Lon book	Number of employees
2014							
2015							
2016							
2017							
2018							

APPENDIX III: COMMERCIAL BANKS WITH MOBILE BASED LENDING PLATFORMS

S.No	Name of Bank	Mobile Based Name
1	KCB-Group	KCB-Mpesa
2	Equity Bank Group	Equitel
3	Cooperative Bank of Kenya	M-Coop Cash
4	Barclays Bank of Kenya	Timiza
5	Housing Finance Company (HFC)	HFC Whizz
6	Commercial Bank of Africa(CBA)	M-shwari

Source; CBK (2019)

APPENDIX IV: SECONDARY RAW DATA

Bank	Year	Operational Performance	Quality of Mobile based loans	Quality of NP Mobile Based Loans	Firm Size	Human Capital
Kenya Commercial Bank	2014	0.388	0.057	0.052	5.576	3.713
Equity Bank	2014	0.521	0.046	0.039	5.443	3.611
Cooperative Bank	2014	0.740	0.057	0.044	5.451	3.602
Commercial Bank of Africa	2014	0.411	0.048	0.041	5.245	3.018
Housing Finance Corporation	2014	0.571	0.143	0.090	4.782	3.408
Barclays Bank	2014	0.499	0.058	0.036	5.354	3.588
Kenya Commercial Bank	2015	0.597	0.065	0.059	5.670	3.876
Equity Bank	2015	0.525	0.036	0.030	5.533	3.538
Cooperative Bank	2015	0.883	0.050	0.038	5.531	3.671
Commercial Bank of Africa	2015	0.482	0.051	0.044	5.298	3.043
Housing Finance	2015	0.581	0.119	0.075	4.838	3.490

Corporation						
Barclays Bank	2015	0.636	0.058	0.036	5.382	3.440
Kenya Commercial Bank	2016	0.705	0.084	0.076	5.703	3.688
Equity Bank	2016	0.607	0.084	0.070	5.579	3.575
Cooperative Bank	2016	0.518	0.061	0.047	5.544	3.670
Commercial Bank of Africa	2016	0.438	0.083	0.071	5.324	3.071
Housing Finance Corporation	2016	0.565	0.173	0.109	4.833	3.458
Barclays Bank	2016	0.599	0.106	0.065	5.414	3.413
Kenya Commercial Bank	2017	0.383	0.091	0.083	5.745	3.812
Equity Bank	2017	0.456	0.080	0.067	5.609	3.827
Cooperative Bank	2017	0.484	0.336	0.259	5.583	3.512
Commercial Bank of Africa	2017	0.472	0.085	0.073	5.361	3.667
Housing Finance Corporation	2017	0.821	0.248	0.156	4.793	3.347
Barclays Bank	2017	0.488	0.116	0.071	5.434	3.188
Kenya Commercial Bank	2018	0.383	0.900	0.072	5.794	3.794

Equity Bank	2018	0.332	0.800	0.249	5.688	3.952
Cooperative Bank	2018	0.518	0.764	0.392	5.697	3.602
Commercial Bank of Africa	2018	0.025	0.873	0.224	5.429	3.678
Housing Finance Corporation	2018	0.628	0.875	0.186	4.995	3.458
Barclays Bank	2018	0.613	0.856	0.070	5.646	3.668