

**DETERMINANTS OF DIGITAL CREDIT APPLICATIONS
ADOPTION AND CONTINUOUS USE IN KENYA
CASE STUDY OF NAIROBI AND ITS ENVIRONS**

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THE CONFERMENT OF THE DEGREE OF MASTER OF SCIENCE IN COMPUTER
INFORMATION SYSTEMS OF KENYA METHODIST UNIVERSITY**

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DECLARATION

I declare that this thesis is my original work and has not been presented for a degree or any other award in any other University

Signed: Date:

This thesis has been submitted for examination with our approval as university supervisors

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DEDICATION

This research thesis is dedicated to my wife and children for their great support and encouragement during my studies.

ACKNOWLEDGEMENT

I hereby wish to thank Almighty God for granting me this exceptional prospect to have this report compiled to the best of my ability through good health. I also wish to extend my heartfelt gratitude to my family and classmates for their overwhelming support throughout this course. I also incline great appreciation to my supervisors, Mr. Adrian Kamotho and Mr. David Munene, who by all ways and means guided and inspired me all through this work. I also wish to acknowledge my employer who allowed me time to undertake this course and my colleagues as well for their immeasurable support.

ABSTRACT

The major goal of this research was to investigate the determinants of digital credit applications adoption and continuous use in Kenya. Digital credit is the borrowing and paying of loans using a digital platform. Since the world's first digital credit solution was initially launched in Kenya over eight years ago, the market has expanded very rapidly opening up the economy and financial sector in a manner never experienced before. These loan disbursements happen via mobile networks with clients using their smart phones and other gadgets to easily request and receive credit facilities through suggested applications. Nowadays, most commercial banks and other able lenders offer digital credit via privately developed applications, which have the ability to quickly and efficiently disburse very expensive short-term loans. This descriptive-analytical study was conducted to check the motivation behind the ever-growing use of these financial technologies. This was done on a targeted population of 600 smart phone users drawn from Nairobi County, its environs and 2 rural towns through purposeful random sampling. Data was collected using reliable and valid questionnaires and the data sets were analyzed using IBM's SPSS version 23 (Statistical package for social sciences). Qualitative data analysis was done using content analysis on the emerging independent variables (technological, economic and social factors) and the dependent variable. Then inferential statistics, which included regression and correlation analysis, were carried out to derive the determinants of digital credit applications adoption and continuous use. In total, 420 smart phone users responded to the survey, which represented about 70% of the targeted population. There was a significantly positive correlation between technology and the dependent variable ($\beta_3=0.580$, $p=.000$). Also, the economic factor had a very significant correlation with the adoption and continuous use of digital credit ($\beta_1=0.362$, $p=.000$). In conclusion, the findings indicated that the social factor had little significance in influencing the adoption and continuous use of digital credit applications. However, the technological and economic factors positively determined the adoption and continuous use of digital credit applications in Kenya. The study recommends that more research be conducted on the underlying variables to unearth any deeper motivating factors to this continuous unregulated and expensive borrowing.

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ABBREVIATIONS AND ACRONYMS

Mpesa – Mobile money service (Mobile Money)

IT – Information Technology

KCB-Mpesa – Kenya Commercial Bank mobile money service

SACCO - Savings and Credit Co-Operative Society

FSD-K – Financial Sector Deepening - Kenya

DTS – Deposit Taking SACCO

FinTech – Financial Technologies

Applications - Applications

ICT – Information Communication Technology

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Cash credit is the ability to borrow money from a designated lender with a set limit of both time and value. Information systems and technology in today's business environment has radically revolutionized the financial sector and in tune has produced digital banking facilities. As a result, the emphasis is moving to IT-enabled business processes and the creation of digitally controlled business models (El Sawy & Pereira, 2013). Technological advancements, changes in consumer behavior, globalization and an increased desire for higher profits, to name a few, are all fundamentally altering the competitive landscape (Ramon & Joan, 2009). As a result, technological advancements have had a major effect on how financial institutions conduct business (Rishi & Sweta, 2004). Digital credit is the ability to lend, borrow and pay money by use of a digital electronic device. The global banking and financial sector is undergoing a digital transformation at a rapid pace. Mobile banking, online banking, agency banking and smartcards are only a few examples of how quickly technology is evolving (Kamau & Ngari, 2014).

A few years ago, the financial sector was so stringent when it came to provision of loaning facilities to the extent that a physical appearance was almost absolutely necessary. The mobile lending space in Kenya has since then grown significantly. Kenya has been hailed as a hub of technological revolution since the turn of the millennium from which creative financial offerings have surfaced with telco company Safaricom's M-Pesa as a clear example. Hence, it comes as no surprise that technology and unchecked lending have grown together so staunchly in Kenya (Owuor, 2019). Almost weekly or monthly, a new mobile loan application finds its way into the market. These applications have a healthy stream of customers because they offer a service that was traditionally very difficult to access, owing to the rigidity of banking institutions that require a ton of paperwork and the difficulty of accessing Saccos that have their set of strict rules (Abuya, 2019).

The mobile money industry is that has expanded to being a lending franchise, is largely unregulated. Digital credit providers ranging from commercial banks to small private entities have come up with a variety of models to rate customers and deliver credit to them. The largest players CBA-Mshwari and KCB-Mpesa collaborated with the biggest telecommunications services provider, Safaricom, to rate potential clients, manage credit disbursement and reimbursement via the M-Pesa infrastructure (Totolo, 2018). The result of this new developments is highly negotiable; while some have used it to grow and generally help themselves others have diminished into a spiraling financial abyss of liabilities. These new technologies have brought digital innovations and disruptors who have changed the business context and means of interaction. Financial institutions will be required to understand and take advantage of these new changes to compete. Consequently, users have to adjust well to these new financial models by understanding their personal and business needs in relation to the newfound system that gives them access to easy and quick cash. The mobile credit offerings seem to be closing the gap for individuals who do not have access to formal banking, or have very unstable incomes preventing them from accessing loan services within the formal financial sector. These offers have enhanced access to credit though there are queries concerning the low-income consumers and whether they are being abused in the process (Owuor, 2019).

1.1.1 Financial Establishments in Kenya

For a country of its economic level and income class, Kenya has a well-developed financial system. Banks, microfinance banks, and deposit-taking SACCOs are the main financial services providers in Kenya (DTS). The Central Bank of Kenya controls 42 commercial banks, 12 microfinance banks and 1 mortgage finance company as of September 30, 2015 (Central Bank of Kenya [CBK], 2015). Aside from the above, non-regulated credit-only microfinance institutions (MFIs), mobile money operators, a significant number of non-deposit taking SACCOs, village banks, financial services associations (FSAs) and savings groups, as well as an increasing number of financial technology start-ups seeking to create a new generation of financial services (FSD-K, 2015).

Kenya's financial services market is dominated by commercial banks (Kamau, 2009). The sector's importance can be seen in June 2015 estimates, which showed that the sector's balance sheet was Ksh. 3.6 trillion (\$39.6 billion), total deposits were Ksh. 2.6 trillion (\$28.6 billion), and gross loans were Ksh. 2.2 trillion (\$24.2 billion). According to the oxford business group the sector's total revenue was Ksh. 226 billion in 2015, making it a major contributor to the country's GDP (Ksh. 6 Trillion). Deposit-taking SACCOs had a gross fund base of Ksh. 301 billion in December 2014, with deposits totaling Ksh. 206 billion (Sacco Societies Regulatory Authority [SASRA], 2016).

Kenya's financial services market is highly competitive, with institutions embracing new operating methods and creating competitive products and services on a regular basis. Mobile banking, related financial innovations, and process, product delivery, and relationship channel digitization are all being implemented. They include groundbreaking digital applications like the MPESA platform, which allows for a variety of banking options via mobile phones. The outcome as indicated by Misati et al. (2010) is that there has been increment in financial products, activities and forms of organizations and the general productivity of the monetary framework has expanded.

1.1.2 Financial Technologies

FinTech applications are a tactical part of modernizing and digitalizing financial business processes. These are real-time financial services and applications that consolidate data, performance and advanced user interfaces to bring services to your clients anytime anywhere (Exove, 2019). In Kenya, M-Pesa was released to the market in 2007. It was among the first mobile money services of its kind around and it sorted out the financial woes of most unbanked individuals during that period. The next sensible step was to introduce credit facilities. The first mobile loans application was launched and issued in 2012 by Safaricom and Commercial Bank of Africa through M-Pesa (Owuor, 2019). A study released this year (2019), shows that Kenya's population financial inclusion increased from 27% in 2006 to 83%.

Digital credit is a loaning facility that allows a customer to access loans remotely without any cumbersome paperwork using a mobile application or any other form of application. These credit advances are instant since credit scores and decisions on eligibility are mechanized based on rules set by the systems then application lied to available info as opposed to human judgement. When a request is done, customer profiling is done in quick succession using the customer's mobile-based information, such as calls records and messages, digital cash transaction history and social networks to determine loan eligibility and credit limit (Totolo, 2018).

Majority of Kenyan banks have released their own mobile credit solutions since 2016, either by collaborating with local telcos such as Safaricom's merger with Kenya commercial bank (KCB-Mpesa), initiating a self-supporting virtual mobile network (VMN) operator such as Equity bank's Equitel or even coming up with independent smartphone applications such as M-Coop Cash developed by Cooperative Bank of Kenya. The repayment process takes almost the same route. A client can either use Mpesa to access the loan repayment options or the application provided by the service provider. The entire process from beginning to end is done remotely.

1.1.3 Digital Innovations

Digital environments have emerged as a result of business information technology, defining new business logics, such as how businesses function and generate value for their stakeholders through digital frameworks (El Sawy & Pereira, 2013). The development of networks that link computers, artifacts, and people is a key feature of digitization (Dorner & Edelman, 2015). The use of digital technologies and infrastructure to overcome the challenge of providing consumers with new, improved, or special value propositions is known as digital innovation. This is mainly accomplished through the application of modern digital technology, which combines information, computation, communication and connectivity (El Sawy & Pereira, 2013).

Digital technology is a unique driver for change and it brings about the opportunities for new and improved business processes, new products and services. In a research on banking institutions, Broeders and Khana

(2015) established and differentiated four fundamental courses in which digital innovations can be used by banks to build value. For starters, a bank's network of customers, staff and suppliers must be expanded. Secondly, digital decision-making is based on massive amounts of data and advanced analytics. Thirdly, digital facilitates straight-through processing, which entails automating and digitizing routine, low-value and low-risk tasks. Finally, digitization is a route for helping development diagonally over products and fundamental plans of action such as business models.

According to Dorner and Edelman (2015), since digital is viewed as a way of doing stuff, it can be used to create value at new business boundaries, in core businesses and in creating foundational capacities that support the entire system. Without a force to transform the financial sector internally, technology brands like M-PESA in Kenya, PayPal, Google, Square and others are likely to thrive. (International Business Machines [IBM], 2014). Financial institutions can either respond in an crude manner or strategize and use digital innovations to automate processes, develop new offerings, improve regulatory compliance, change their clients' experiences and disrupt key value chain components (Broeders & Khana, 2015). Over the last few decades, different ways of innovation adoption have been studied. Previous research on what motivates creativity has tended to be divided into two schools of thought (Trott, 2011). Economic circumstances, according to the market-based view, provide meaning that encourages or forces a firm's level of creativity. The emphasis is on a company's ability to recognize opportunities in the commercial center (Porter, 1985). In the face of volatile and unpredictable markets, however, the resource-based viewpoint contends that a company's own assets provide a much more stable environment in which to make advancements. The focus is on the company, its assets, skills and abilities. In light of these hypothetical perspectives, this empirical analysis focuses on five themes: organizational capital, technological advances, competitive pressure, the pursuit of new revenue growth sources, and changes in consumer behavior.

1.1.4 Technological Evolution

The development of modern technologies because of technological inventions and developments has had a significant effect on every industry in the past (Frame & White, 2009). Technology, according to Rogers

(2003), is made up of two parts: hardware (tool) and software (software) (information base). The three-part direct model of innovation (invention, innovation, and diffusion) is a helpful tool for comprehending technology and transformation (Hall, 2004). The core of the banking business is being affected by technological changes. According to Cheston et al. (2016), modern technology goes beyond the proliferation of mobile banking applications and the growth of payment systems and agent networks, To help digital banking, companies are turning to data analytics and aligning back-end systems. Innovation, and what comes after it, would change the banking and financial services industry to a large extent (Cooper, 1998). Financial organizations with the most up-to-date technical advances are in a good position to expand this capability.

Digital technology opens up new and improved commercial capabilities, and it is a powerful force for progress. Financial firms develop new offerings based on computer and mobile technology as it becomes more widely available and lowers transaction costs (Dörner & Edelman, 2015). According to Bultum (2013), technological advances have made it possible for consumers to conduct transactions without having to visit a physical bank. Improvements in computer and telecommunication technology, according to Mushkin (2001) as cited in Kubasu, (2010), are the most important source of supply-side changes that stimulate financial-related innovation.

According to Abuya (2019), 75 percent of banks in a study cited a lack of suitable technology as an obstacle to going digital. Cheston et al. (2016), on the other hand, argued that strategic banks have accessed new technologies through collaborations with telecommunications companies, financial technology companies, and other businesses. Teece (2010) claimed that technology alone cannot communicate an upper competitive hand and what matters most is what banks do with it to build up a remarkable, customized client encounter.

Matt et al. (2011) in an analysis of digital banking identified technological advances in mobile devices (equipped with more and better functionality) and networks, rise of social media and collaboration tools, new channels integration, improved interactive interfaces and Predictive models and digital analytics Predictive models and digital analytics Gardachew (2010) found that banks in Ethiopia have not achieved

efficiencies as a result of modest adoption of technical developments. In India, Deorukhkar and Xia (2015) discovered that technological advancements occurring outside of the bank are forcing conventional banks to evolve. In studies by Zwass (2003), Turban et al. (2004), the role of the internet in revolutionizing the financial services industry was investigated, and it was discovered that banks have leveraged the technology to position themselves competitively. Financial institutions have re-evaluated their strategies to ensure that they are fully using internet and mobile technologies.

1.2 Statement of the Problem

The concept of digital credit is a new one (Francis et al., 2017). In the last six years, mobile loans have transformed the market for loan facilities in Kenya. Electronic devices, electronic footprints, digital loan eligibility, proxy networks and credit references have assisted providers to deliver loans quickly and efficiently. For the majority of illegible individuals, the access to digital credit using mobile gadgets has unlocked the gate to exclusive, formal and customized consumer loans for the first time (Totolo, 2018). Yet the costing, marketing and possible abuse of these services combined with the ever increasing bleak reporting of defaulters has raised a real issue about their system development and the repercussions they have on consumers and the monetary system as a whole.

Mobile lending in Kenya comes in many diverse models, which include the individuals who use digital mobile applications, digital wallets and checkoff credit facilities. The providers of this services range from financial institutions, telecom companies and even SACCO (savings and credit cooperative societies) based institutions. Majority of these digital credit service providers offer these services in an unregulated environment (Owuor, 2019). There are now more than 40 mobile credit applications in Kenya and the hype about the opportunities these new services could offer is now public knowledge. Many customers enjoy the efficiencies offered in getting credit facilities from their digital gadgets as opposed to turning to informal moneylenders or shylocks. However, consequentially, such speedy accruals raise queries concerning the different ways in which consumers are actually utilizing these digital financial offerings, user security

problems and other threats such digital credit services could bring for potential consumers (Kaffenberger, 2016).

The services generally on offer are of small-value - short-term loans. With Mpesa, access to the internet was not a real requirement but with majority of the digital credit application services, one should have a smart phone and access to data connections. Connectivity is a must which brings questions of universal access (the digital divide issue) and device affordability. Majority of Kenyans, especially the youth have borrowed beyond what they require and have found themselves in a never-ending debt circle. Generally, what are the motivating factors behind this continuous, expensive and unregulated borrowing?

It is against the backdrop of this information that the study is set: to check the determinants of digital credit applications adoption and continuous use in Kenya. In the Kenyan context, there has been very little study done to be significant. There is also little empirical evidence hence this study will visualize filling this research gap.

1.3 Aim of the study

The aim of this study was to scrutinize the determinants of digital credit applications adoption and continuous use in Kenya.

1.3.1 Specific objectives

The objectives of this study were: -

- i. To analyze the technological determinants of digital credit applications adoption and continuous use in Kenya
- ii. To study the social determinants of digital credit applications adoption and continuous use in Kenya
- iii. To scrutinize the economical determinants of digital credit applications adoption and continuous use in Kenya

1.4 Research Questions

The study was guided by the following research questions: -

- i. What are the technological determinants of digital credit applications adoption and continuous use in Kenya?
- ii. What are the social determinants of digital credit applications adoption and continuous use in Kenya?
- iii. What are the economical determinants of digital credit applications adoption and continuous use in Kenya?

1.5 Significance of the Study

Owing to the fact that the use of new and innovative financial technologies in the financial sector and in specific in the loans processing and disbursement makes this study of paramount importance to each of the following stakeholders:

Government and other key Stakeholders: the research and its findings should provide insights to policy makers in the country. First, this awareness can enable the government to nurture the country's ability to fully adopt, realize and regulate a technology driven financial sector. In addition, strategic insights could be generated for other major stakeholders, especially decision makers and practitioners in financial institutions as they revolutionize their business models in a steadily and rapidly evolving technology driven system. Finally, this research should provide innovators and financial services advisors with a vast understanding so that they can come up with smart and effective digital applications, business models and strategies applicationlicable for success in their respective organizations. The success in specific financial institutions will eventually lead to overall growth in the sector.

Learning fraternity: the learning fraternity especially in the ICT, finance and economic fields of study would benefit greatly. This study envisions a situation that could lead to creation of new opportunities in the ICT field as well as availability of forums in which new applications related to mobile lending could be checked and exchanged. The findings and recommendations should contribute largely to knowledge in the

field of digital innovations. By being able to analyze determinants of digital credit applications, it should explain digital capabilities acceptance and use. Another advantage would be that a successful implementation of a working system would mean that more funds could be channeled by relevant stakeholders towards software development.

Consumers: it is every person's wish to have affordable, available and accessible financial products and services. This study was meant to scrutinize the various offerings in the market and the underlying constituents so that the average consumer can be able to make an informed decision before committing to specific financial obligations.

1.6 Limitation of the Study

The study encountered several limitations. First, time and resources limitations required the scope to be narrow enough to be manageable. The study specifically focused only on smart phone users in Nairobi and its surroundings. This could have a limitation in generalization of the findings in other towns. This limitation is mitigated by the fact that smart phone users in Kenya have unlimited interaction and collaboration with a number of mobile loan applications and other financial technologies. Another limitation was in data collection methods applied. The researcher applied the questionnaire as the main data collection instrument. This limitation however, was managed by making the questionnaire as comprehensive as possible (with open questions for probe) and combining with interviews when the situation called for it.

This research targeted a wide range of smart phone users covering almost each economic class including senior corporate executives. Due to hectic and busy schedules, some of the executives delegated responses to their juniors making it hard to get a comprehensive response. In this case, the researcher consulted directly with the executives to guide on the most suitable timings to get their input.

1.7 Operational Definition of Terminologies

Application: an application is a software program that runs on your computer from a specific platform.

Automated credit scoring: it's a form of computerized credit analysis that is used to screen large quantities of credit information for applications that may be approved with the least amount of human intervention and decision-making resources.

Agent networks: these are established independent distribution networks (retail chains built by independent small scale traders and retailers) used by banks and other financial service providers instead of traditional branches to reach more customers at a lower cost.

Credit references: is a person's or companies' data about their previous or historical credit track records. Usually used to offer an informed credit rating.

Digital banking: this is moving most normal bank operations and activities that were traditionally only available to clients when physically present to a computerized platform.

Digital credit: the ability to borrow and repay loans via a mobile phone.

Digital footprints/digital shadow: the data left behind by individuals or institutions in cyberspace as a result of their constant online activities. It is a manifestation of traceable online activities and communications by persons or organizations as they frequent the internet.

FinTech: digital applications and computer technologies meant to aid and support financial services.

Financial inclusion: this is general access to affordable financial services by individuals and businesses that meet their monetary needs.

Virtual mobile network operator: is a mobile services provider that leases a network infrastructure as opposed to owning it while providing digital services to its customers.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

In this section, we reviewed the critical points of current use of ICT in the control and management loans in the Kenyan financial sector as well as other relevant global examples as well as theoretical contributions from previous research findings. We also generally looked at the literature on digital banking in Kenya and other parts of the world plus the policy framework put in place to enable a proper understanding to the masses of the relationship between ICT and finance and how the two can work together in easing the burden of poor financial inclusion in Kenya as well as creating opportunities in the related sectors.

2.1 Theoretical Review

In the study of information technology and finance, there are several concepts that attempt to explain determining factors of digital credit applications adoption. These theories include; the M-commerce concept, digital financial inclusion concept, FinTech acceptance theory and the innovation diffusion theory. Each of these theories makes an assumption regarding the behavior of other aspects of the sector. These theories are useful in addressing the objective and research problem of the current study.

2.1.1 The mobile commerce theory

This is the transfer of money using mobile digital devices with the most common of being the use of the mobile phones. Kenya, for example, has witnessed tremendous growth in the telecoms sector as the mobile phones phenomenon in the world has greatly evolved (Munyao, 2012). Safaricom's Mpesa is the top mobile money services in the country by value and volume of transactions. The value of M-commerce dealings in Kenya is beyond the Kes1 trillion (\$10 billion-usd) mark and still considering the fact that there has been a significance reduction in the number of M-commerce transactions to 308 million as compared to the previous quarter's 352 million (Balancing Act, 2018).

Safaricom additionally extended its M-Pesa Kadogo tax administration under which the firm destroyed the expenses for all exchanges underneath Sh100. Then again, Equity Bank has connected in excess of 30,000

traders to acknowledge retail installments through Equitel. In 2015, the bank began by joining shippers to Eazzy Pay till to get versatile installments from all portable cash stages, for example, M-Pesa and Airtel Money, empowering quicker development in enlisting dealers. Safaricom presented Lipa na M-Pesa in 2013 and has in excess of 50,000 dynamic vendors, for example, inns, grocery stores and fuel stations. Portable cash administrations are being utilized more for retail installments due to the expanded comfort, decreased expense and the improved speed and security they offer (Mbogo, 2019). This idea was utilized to measure how Mpesa has accomplished great guidelines in global exchange.

2.1.2 Digital theory of financial inclusion

This can be defined as digital access to, and the use of, formal financial services by the excluded and marginalized population (Consultative Group to Assist the Poor [CGAP], 2018). Low-medium workers need effective monetary instruments to help them better deal with their incomes and development. The greater part of the monetary administrations they can get to are either costly, unreasonable or not applicationropriate to their necessities. To push monetary incorporation endeavors the world over, innovations for poverty action (IPA) works together with specialist organizations, governments and scientists to plan and truly test monetary administrations and projects empowering sound monetary conduct among the oppressed.

Right now, inventive advanced monetary administrations are utilizing mobile phones and other digital devices to support a huge number of helpless clients to access digital financial services as opposed to money-based exchanges (Global System for Mobile Communications [GSMA], 2018). The cycle of advanced monetary consideration begins with the belief that the marginalized population have some kind of general ledger and need digital admittance to strengthen them to do basic financial exchanges distantly. On the off chance that the unbanked population understand by being convinced about the expected advantages of advanced monetary incorporation, a powerful computerized monetary program should be enough to sort out the issues of the rejected and marginalized group and should be conveyed mindfully at a price that is logical to providers and reasonable to clients.

Information technology in business has produced a digital environment that is defining new logics in the way they individuals operate and how they create value through several mobile digital platforms. Arguably, the most basic purposes behind digital borrowing among Kenyan grown-ups are business and everyday necessities. The use designs don't vary much among people, yet income sources applicationear to assume a significant role. Buyers who run their own organizations or farming activities generally acquire for business reasons (Totolo, 2018). The main feature of digitization is the creation of networks. This is essentially achieved by leveraging new digital technology, which is a combination of information, computing, communication and infrastructure.

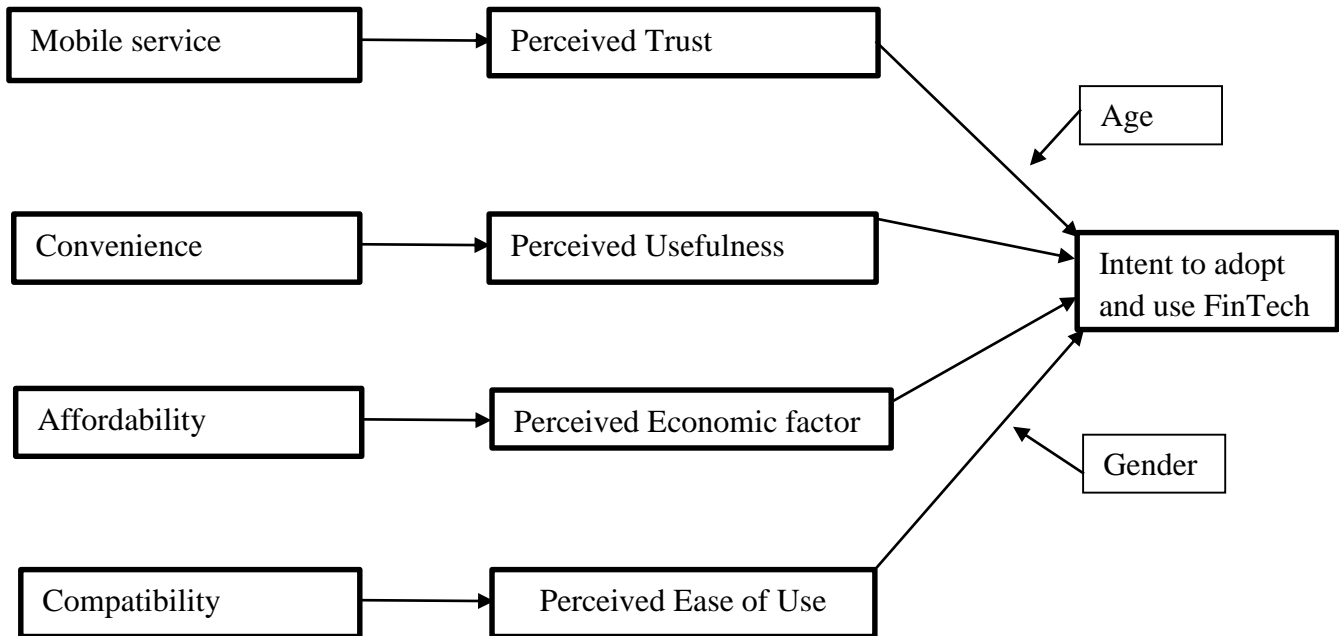
2.1.3 FinTech acceptance theory

Financial technologies acceptance and use theory can be evaluated if the contributing factors of the adoption and use of this new technologies are perceived trust, perceived usefulness, perceived economic factor and perceived ease of use (Chuang et al., 2016). Perceived trust would be the degree to which individuals believe that their personal information and transactions will be safe in the hands of the service providers. Perceived usefulness would be the fact that users believe the use of a certain technological product could efficiently enhance their operations. Affordability is a very serious issue and users need to believe that using these products improves them economically. Final determinant would be perceived ease of use, which is based on the fact that clients believe the use and general operation of a certain product, does not require much effort. The growth of FinTech has resulted in continuous service productivity which has increasingly improved the level with which customers are accepting the new technological innovations. The growth of monetary innovations, for example, electronic, computerized and Fintech Services has brought about a continuously growing advancement in product efficiency, which proceeds to challenge and take into account the perspectives of buyers who are tolerating innovation items to acquire market openings. In light of the novel thoughts including new applications with extraordinary market potential, Fintech products have become the focal point of new digital applications (Choi et al., 2015).

Through digital money technology, traditional banking activities such as financial settlements, buying phone credit, utilities and fee payments, savings and online banking can be performed (International Finance Corporation [IFC], 2011). Africa has one of the largest number of mobile subscribers in the world but sadly has the largest portion of unbanked individuals. Mobile technology uses extraordinary financial instruments to deliver banking services to the unbanked mobile subscribers in rural and urban areas. Digital cash speeds up cash movement since all remittances happen electronically (Morawczynski, 2009). The rapid growth of mobile money technology has increased access to markets, prices and lately digital credit or loans. A rapid growth in mobile phone subscribers and universal access have made telecom service providers to provide enhanced services in Kenya and Africa as a whole. However, the adoption of digital financial services generally in Africa has dragged in part due to trust issues and fear of the unpredictable network and internet services. In addition, factors such as fraudulent activities, network interruptions and poor quality of service have contributed to the metered intake.

Figure 2.1:

Enhanced FinTech acceptance model



2.1.4 Innovation Diffusion Theory

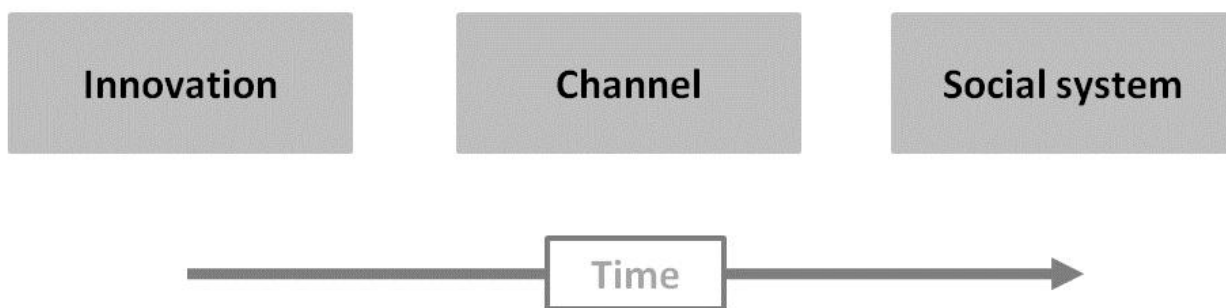
We can perceive a new concept, practice, or practical idea as an innovation (Rogers, 2003). This is a theory that tries to explain how new ideas are born and the rate at which the new ideas and technology moves. Innovation is imparted via specific channels through the process. New ideas are invented, diffused and embraced or rejected (Gongera et al., 2013). There are certain factors identified which associate to affect how innovations are disseminated. Rogers (2003) proposes four factors that explain how new ideas are disseminated; these are the concept itself, the medium by which it is disseminated, the passage of time and the social system. Diffusion, in a nutshell, is the mechanism by which an innovation is transmitted over time to individuals in a social system. The diffusion principle would lead to mobile credit developments in their simplest form. This definition begs for a deeper understanding of how the prevailing forces aligned in the invention of an idea either accelerate or slow the dissemination of a product or

practice by individuals in a specific adopter community. As influential variables, the concept itself should be evaluated in terms of relative benefit, compatibility, and sophistication (Dillon & Morris, 1996).

Diffusion, according to this theory, manifests itself in a variety of ways, though it is highly dependent on the idea's adopters and the innovation decision-making process. In most cases, adoption in a social setting does not occur all at once, but rather in a time series dependent on how long each person takes to consider the new concept. Adopters may be classified as early, late, or slow adopters.

Figure 2.2:

Innovation dissemination (Rogers, 2003)



2.2 Empirical Review

Studies examined digital credit as one of the major advances in the history of financial technologies. We examined various entities and how they use this new technology to achieve the advantages therein. Some of the key components were how they were affected by the technological, social and economic factors. Determinants of digital credit applications usually incorporate the degree of financial awareness, age, gender, income stability, education level and general situation of the breadwinner (Wamalwa et al., 2019).

2.2.1 Financial Access

This checks the access, usage, quality and impact of financial services in Kenya. The Kenya FinAccess demand review estimates admittance to and interest for monetary services among mature consumers countrywide (FSD, 2015). In February 2012, FSD Kenya involved Microfinance Opportunities (MFO) to propose the comprehensive curriculum of a monetary training educational program for Savings Groups (SGs) and the most efficient method to convey it. The reason for this activity was to acquire a better comprehension of the key monetary ability challenges that these gatherings and their individuals face, so as to plan an important and proper monetary training educational program that advances necessary changes in personal financial management and sustainability.

Another report, the monetary capacity report sought to give an underlying focal point on the present status of monetary abilities in Kenya. Utilizing existing information gathered as a feature of FinAccess 2009, the report investigates different components of monetary capacity explicitly created to reflect real ground factors that Kenyans face in their monetary lives (Nelson, 2013). However, the reports do not accurately analyze the financial literacy issue, as they cannot adequately give information on whether Kenyans have the abilities and knowhow that can enable them to make proper and smart decisions concerning their financial wealth.

2.2.2 Technological innovation

Innovation because of technological inventions and improvements has a major impact on any industry (Frame & White, 2009). The three-section direct model of invention, innovation and diffusion is a useful guide in understanding technology and technological change. The additions done by new technological innovations to financial stability and the general economic welfare is mainly determined by the speed and fashion by which innovations are accepted and absorbed by the concerned populace (Hall, 2004). Technology changes are affecting the core of the banking business. New technology is going beyond the mere proliferation of mobile banking applications and the rise of payment systems and agent banking, to data analytics and aligning back-end systems to support digital banking (Cheston et al. 2016). Digital technology creates opportunities for new and improving commercial capabilities and is a great driver for

change. As computer and mobile technology becomes more available and substantially lowering transaction costs, financial institutions conceive new offerings dependent on this technology (Dörner & Edelman, 2015). New innovative technologies are very crucial in the financial banking sector in that they create value for financial institutions and clients in allowing them to perform financial transactions without physically being present or visiting a bank premises (Bultum, 2013). In addition, digital banking has helped financial institutions compete more effectively globally by going beyond traditional restrictions of time, space and physical borders to advertise their products and services as well as acquire new markets (Turban et al., 2008).

Advances in ICT including data processing have had significant impact on the financial services provision (Heikkinen & Korhonen, 2006). According to Frame and White (2009), these changes have additionally impelled innovations that have revolutionized bank products, services and traditional processes. Cheston et al. (2016) observed that strategic banks have leveraged partnerships with telecommunication companies, fin-tech companies and other strategic partners in accessing new technology. Technology alone cannot convey an upper competitive hand and what matters most is what banks do with it to build up a remarkable, customized client encounter (Teece ,2010).

Because of moderate adoption of technological innovations in the Ethiopian financial sector, banks have not achieved capacities for efficiencies (Worku, 2010). Today, banks can harness innovative technologies to transform how banking services are delivered to their existing customers and to reach new ones at scale. Financial institutions with the latest technological advancements are positioned to build this capability further.

2.2.3 Evolution of Customer Behavior

In the services sector, customer experience (convenience, access, and delight) is becoming a differentiator, with technology serving as an enabler. Customers' expectations have shifted dramatically; they now expect much more from banking services (Tan & Teo, 2000), as well as quicker decision-making and a wider range of options. They still want a lot of ease and versatility (Birch & Young, 1997). Traditional banking

methods are unable to provide effective but simple-to-use platforms, goods, and services. The rise of online networking and collaboration platforms has empowered customers and workers, ultimately shifting ownership of the brand message from companies to consumers.

All customer segments are favoring digital, particularly the emerging middle age and youth, who, according to Matt et al. (2011), are on the verge of defining the minimum essentials for banking relationships. The essence of the digital product or service is a critical factor in their decision-making and knowing these changing customer expectations will lead to better results. (Accenture, 2015). The primary aim of increasing the customer base is to make "buying something" easier, more convenient, quicker, and less expensive. Financial institutions must constantly evolve and refresh in order to maintain their demanding and discerning consumers, as well as provide convenient, dependable, and expedient services (Tan & Teo, 2000). According to a report by Nyangosi and Arora (2011) on internet and mobile-based services, financial business establishments used a variety of electronic distribution platforms to meet client requests. The use of information technology in the banking industry has been found to be critical for maintaining client loyalty. Traditional brick and mortar banking suffers from long lines, bad customer service, and client frustration (Karjaluo et al., 2002) The rapid implementation of electronic distribution has resulted. Banks can gain a competitive advantage as a result of digital technologies, with the benefits centered on meeting client needs and cost savings. Matt et al. (2011) discovered that there is a clear direct association between digital participation and customer satisfaction in a study of almost 3,000 banking customers from a variety of segments across markets. Digitally engaged clients have a proclivity for broader product portfolios. Matt et al. (2011) discovered that banking partnership primacy led to increased share of wallet and, as a result, higher revenue generation from the consumer pool. Furthermore, according to Bareisis and Latimore (2014), 47 percent of banking executives believe that investing in digital technologies is justified.

In conclusion, digital technologies appear to have a profound impact on today's financial institution's operations and development. The digital transformation is expected to increase performance, productivity, and consumer

touch points (Deorukhkar & Xia, 2015). The role of external factors such as technology, customer preferences driven by a new generation of customers who place a premium on time and convenience (Totolo, 2018) cannot be underestimated. The strategic and competitive background of a company is inextricably linked to the innovation process, regardless of how the outlook shifts due to external factors such as technology and the competitive climate (Kubasu, 2010). Financial institutions' investments in technologies, on the other hand, are a required move, even if they seem exorbitant.

2.2.4 Digital finance

An extremely volatile and dynamic business atmosphere can initiate a drastic change in the traditional processes of financial institutions. Financial technological advances in Asia's emerging markets, happening outside the bank, are compelling traditional banks to adjust (Deorukhkar & Xia, 2015). New participants, for example, mobile network operators (MNOs), payment service providers (PSPs), agent aggregators, retailers, FinTech organizations, neo-banks and advanced platforms are utilizing these technological advancements and adjusting the competitive scene for monetary services. Disruptive advancements and new participants are thoroughly changing the monetary services industry compelling customary business plans and designs to adjust and change the financial aspects of conveyance to help overlooked communities (IFC, 2019).

A highly turbulent environment must be kept up by unending creative development and improvement of the offering and the processes. Digitization forcefully adjusts the very essence of products, the procedure of worth creation and on top of all, a companies' aggressiveness (Koch & Windsperger, 2017). A firm's capacity to create and appropriate greater value than the rivals on a sustained basis is highly uncertain (Klein et al., 2012). Competitive challenges compel firms to deleverage and search for new sources of significant worth (Klein et al., 2012). As competitive atmosphere in financial services sector intensifies, financial institutions are facing pressure of doing business and reporting positive performance (Ngumi, 2013). Financial institutions in Kenya are using financial innovations to survive and remain competitive. The study also established that stiff competition has forced banks to set up and put into effect financial innovations

such as mobile banking, internet banking and agency banking and necessary decision support (Kamau & Ngari, 2014). Digital innovations use highly automated, scalable, software-based services with no complications of physical awareness. New market participants as well as big nonbank technology companies are side stepping banking basics by embracing partnerships, finding ways to become partners in the ecosystems of traditional banks, deepening competition.

2.3 Critique of existing literature

Not much has been done in checking the determinants digital credit applications adoption and use in Kenya but several studies have been made in adoption of digital credit by financial institutions as well as uptake of credit facilities by the youth. Joseph Wanjohi Kimotho, a research student, concluded that Organizational resources especially monetary resources are important determinants of digital innovations adoption by financial institutions. The more monetary resources a financial institution has the more likely it is to adopt digital innovations. The study also concludes that technological changes form an important category of determinants of digital innovations adoption. This could be in two ways; financial institutions leveraging on technology advancements to improve their organizational functions or constant changes in software and hardware leading to challenges of financial institutions having obsolete technology. There could also be issues of data security, which could make financial institutions hesitant in adopting digital innovations.

Timothy Musha, who was investigating on the uptake of credit by the youth, observed that the youth have not significantly employed the use of credit for their business investment. This is as most of the youth that have been able to access the loans for investment reported that they were only able to receive a sum amounting to less than 10,000 shillings, which is considerably a low value with respect to business investment requirements. On the effect of credit terms attached to the loans offered by the lending institutions, the study findings illustrated that these terms greatly influence the level to which the youths obtain the credits for their investments. This is due to the fact that the youths, being not familiar with loan investments have the fear of defaulting in repayment and also fear of risk taking thus they tend to think that although they qualify for the loans, it would be strenuous for them to pay back the loans.

FSD-Kenya, who are pioneers in the field of financial technologies research, in association with the Central Bank of Kenya (CBK), Kenya National Bureau of Statistics (KNBS) and CGAP directed a nationally representative review with more than 3,000 Kenyans to discover who's utilizing mobile credit? precisely how huge is the market? what effect is it having on low-income clients? The discoveries propose that digital loans have become a main wellspring of credit in Kenya and that they are generally used to fund working capital and everyday utilization needs. In addition, it shows that numerous borrowers are having a hard time repaying the loans.

However, these studies fail to address issues such as: why do digital network subscribers or mobile users keep borrowing this rather expensive short term credit in a heavily unregulated sector. Clearly, from, previous findings, majority of digital borrowers either find themselves in a never-ending debt cycle or totally fail to meet their financial obligations. This study is meant to attempt to find out the determinants of the continuous use of these digital credit facilities.

2.4 Conceptualization

In this section, we break and convert the research study ideas into common meanings to develop an agreement among the variables (Sequeira, 2014). The conceptualization process helped the researcher to encase some meaningful concepts, which finally lead to creation of a theory. The following are the conceptualized dependent and independent variables and their respective measures.

2.4.1 Economic Factor

Mobile cash has changed the scene of monetary incorporation in creating and developing new market countries, jumping the provision of formal financial services. This segment clarifies how portable money possibly improves a few zones of market failures in growing economies, including saving, insurance and the empowering of women (Muellbauer, 2019). It illustrates these impacts and concludes that the system wide impacts of versatile money might be considerably more prominent than current examinations recommend. Mobile money is accessible in 66% of low-to-middle income nations.

The computerized Economy has gained some significance inside the worldwide economy as a driver of advancement and competitiveness. As a component of the global village, this new environment presents an exceptional opportunity for monetary development. As digital advancements become the foundation of every day routines, Governments, organizations and people should adjust to this new reality. Going digital is currently the bedrock of our financial development (Ministry of Information Communication and Technology, 2019).

In 2018, telecom advances and services produced 4.6% of GDP worldwide. The mobile environment additionally supported around 32 million jobs (directly and by implication) and made a generous contribution to the financing of the public sector (GSMA, 2019). By 2023, digital technologies should arrive at 4.8% of GDP as nations around the world progressively gain from the enhancements in profitability and proficiency achieved by expanded the take-up of digital services.

For the average consumers who range from low income individuals to those others from the economically 'vulnerable groups' who don't have regular or conventional flows of income like farmers, access to digital finance is currently the only way to receive financial reprieve. While access to credit from formal monetary establishments, for example, banks, microfinance foundations and reserve funds and savings cooperatives (Saccos) has improved, the digital credit has essentially expanded access and usage of credit to an enormous group of borrowers recently barred from formal monetary administrations in developing economies. Digitally delivered microcredit has effectively assisted individuals previously sidelined in the economy, notwithstanding, it is a costly and generally short type of financial credit (Wamalwa et al., 2019). Because of the costly nature, advanced credit contributes fundamentally to the quantity of individual defaulters conveyed to the credit department. According to MicroSave, over 2.7 million Kenyans have been reported to the credit reference bureau for a negative posting or late reimbursement or inability to respect their monetary commitments. Nonetheless, a more comprehensive study is expected to readily capture the role of digital credit in adding to the new rise of non-performing loans in the vast banking sector (NPLs) (MicroSave, 2019).

2.4.2 Technological Factors

The digital mobile development has improved the information limitation observed by ordinary banks in loaning to the low and underprivileged income earners. Additionally, the development of money into electronic bank accounts for the unbanked and the constant history of their monetary exchanges is another factor. Utilizing algorithms, these accounts give evolving individual assessments that in the long run permit clients to acquire a pathway to formal monetary administrations only accessed via digital handheld devices, for example to interest bearing investment accounts, advances and insurance items (Muellbauer, 2019). Hire purchase credit is conceivable through mobile money, allowing secure, distant acquisition of expensive tangible items on a compensation as-you-use premise. Cell phone innovation has the advantage that clients invest resources into the handset, while an adaptable and scalable framework is as of now present for anytime and anywhere dissemination of credit through a safe and organized channel. By embracing mobile cash, under-served residents gain access to a protected method for private savings and a means to move of cash securely and at a lower cost.

The Kenyan government through the relevant authorities, granted MVNO (mobile virtual network operator) licenses to several new service providers to enable them offer mobile financial services without building a new cellular infrastructure (Mulwa & Mazer, 2014). Leveraging technologies supports financial inclusion as an effective answer for poverty reduction in growing economies and poverty-stricken nations. Experiences from this research can furnish national and worldwide policy experts with a comprehension of the issues related with the fast advancement of digital monetary administrations, its conveyance to poor people and the dangers in question.

2.4.3 Social Factor

The social underpinning factors affecting the use of mobile technology to borrow money are more complicated than they sound. From the fact that we are pushed to multiple borrowing habits by pressures of society to different perceptions from the environment of the knowledge that we have a credit facility. There is no room for doubt that as partakers of these new technologies, our livelihoods and way of life has been

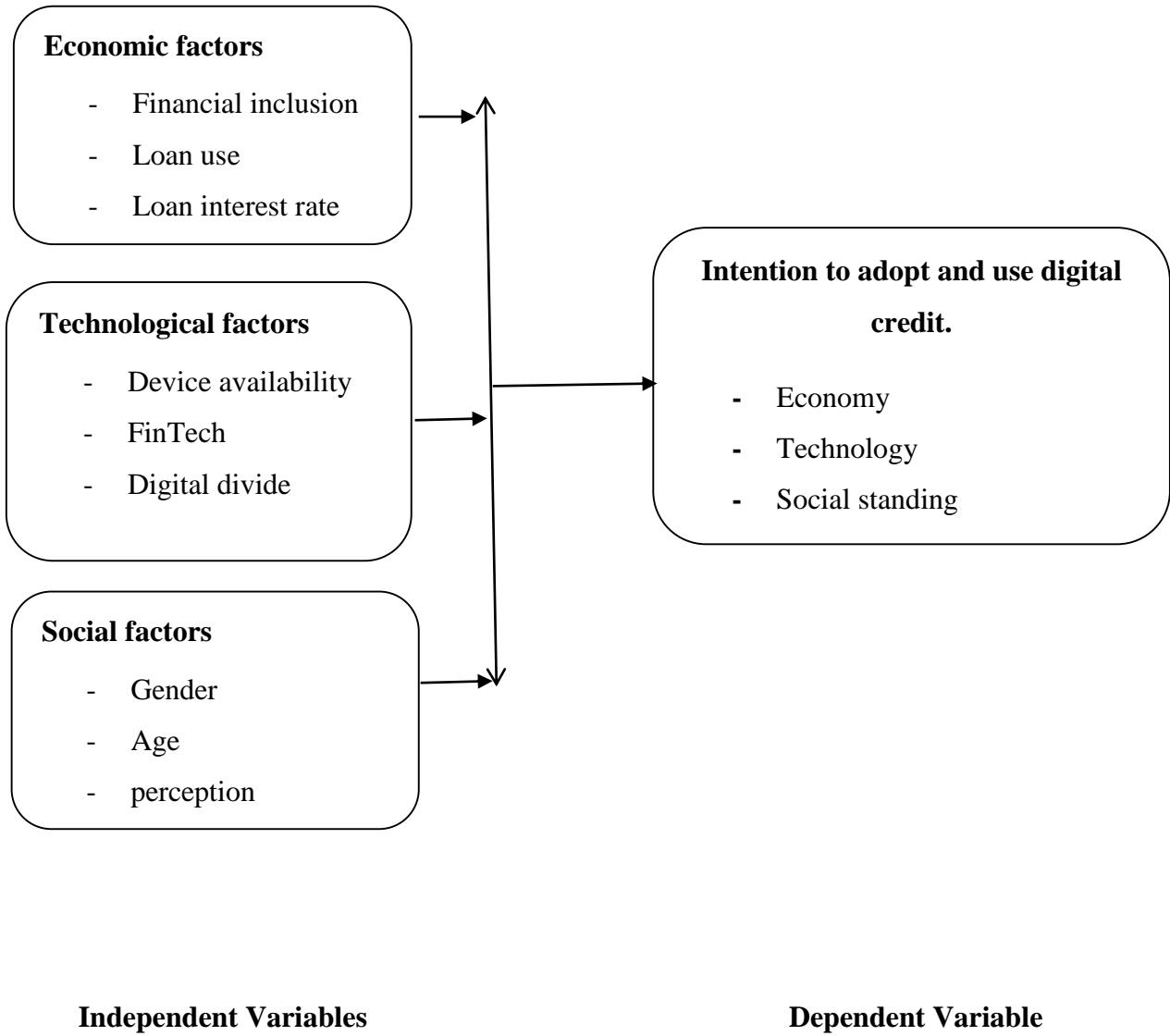
changed by our smartphones, social media, online shopping and access to readily available information, but what does access to mobile loans really mean to our social standing?

A survey conducted by FSD Kenya (Financial Sector Deepening) confirms previous studies that show digital loans appeal more to youthful clients who in general will be of the male gender (accounting for 55%) and mostly from the metropolitan territories and moderately educated. Nevertheless, the client base for digital credit is by all accounts expanding, particularly from a gender viewpoint. Initially, this was assessed at a 59 – 41 percent proportion of gents to ladies unique consumers of digital credit. This research decreases the gap to a 55 – 45 percent proportion (Totolo, 2018). In any case, the positive pattern in unique borrowers does not imply that the gap is lessening in relation to volumes and estimations of digital loaning. Interviews with service provider affirm that men will in general borrow more frequently and in bigger portions on average.

Digital loans have extended quickly both in Kenya and Tanzania, yet there is little proof on who is utilizing it, how it is utilized and the risks clients face (Kaffenberger, 2016). Some gender contrasts may arise in client user/cases. In Tanzania, ladies are bound to report utilizing credits for business purposes, clinical needs and school charges, while men are bound to get to loans for domestic commitments or to pay an existing credit facility. Conversations with digital money service providers indicate that a portion of dynamic clients who take loans every month or even each week, drives digital credit growth in the mobile credit market. This section would benefit from opportunities to grow to bigger, more reasonable loan facilities with longer reimbursement periods that can be put to more sensible purposes than the current offerings.

Figure 2.3

Conceptual Framework



Source: Author (2020)

2.5 Knowledge Gap

Generally, Kenya is a pioneer in mobile phone-based money transfer and microfinancing services. With the launch of Mpesa in 2007, Kenya's largest telco, Safaricom, quickly got into the global map of technological innovations. Then came Mshwari in 2012, Kenya's initial mobile banking offering served by the Commercial Bank of Africa (CBA) which still originates from the Mpesa architecture. The benefits thereon of digital credit options are there to be seen. CGAP (Consultative Group to Assist the Poor) has been monitoring the spread of mobile loan services for the last two years. It is beyond doubt that there is some serious innovation and creativity in this sector, but the expectation is that there are several scenarios where fundamental calculative mistakes have occurred.

We have spoken with suppliers about the mistakes made by digital loan pilots and implementation. A few issues discovered are, for example, offering loans without a solid remote ID framework offering remote services is hard, particularly at scale. Others included; Poor selection, where loan offerings pulled in a high-risk candidate pool, weak system design, for example, a fee charged for moving cash to/from a digital cash account, which quickly made the service unviable as it gave excess focus on disbursement and less focus on reimbursement. There wasn't any viable and efficient cash collection method (Chen, 2016). A critical study as to why there are no strict policies on transparency of the product offerings and the lack of regulation in the quickly growing sector should be carried out.

We have spoken with suppliers about the mistakes made by mobile loan pilots and official releases. A few issues discovered are, for example, offering loans without a solid remote identification system offering remote administrations is hard, particularly at scale. Others included; Poor targeting, where loan service offerings pulled in a high-credit risk candidate pool, Poor product plan, for example, a charge for moving cash to/from a mobile device cash account that immediately made the item unviable and finally, an unnecessary focus on credit ratings instead of focusing on more efficient loan recovery techniques (Chen, 2016). A study and report concerning why there are no severe policies on the transparency of the product offerings and the absence of regulations in the rapidly developing sector ought to be done.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter mentioned the ways accustomed to perform the research. Research is the method of coming to an effective answer to an issue through systematic assortment, analysis and interpretation of the available info. Methodology is the scientific approach of sourcing the research problem. This chapter was involved with research design, target population, location of the study sample, sampling techniques, knowledge assortment instruments and knowledge analysis procedures adopted to realize acceptable relevance with dependableness of the research tools additionally explained.

3.2 Research design

The blueprint or precise strategy that is followed to accomplish the study is referred to as a research design. It guarantees that the research is relevant to the topic and used cost-effective methods (Kothari, 2004). It can be summed up as a collection of methodologies or procedures chosen by a researcher. It explains how, when, and where data for the research objectives will be collected and analyzed. When answering questions, the researcher's procedure plan should be valid, objective, cost-effective, and accurate (Kumar, 2011). Case studies, cohorts, cross-sectional, descriptive, experimental, exploratory, correlational and observational research designs are only a few examples (Kumar, 2011). The study used descriptive research design. The descriptive research style was meant to acquire pertinent and precise information regarding the present standing of the development and to draw a valid general conclusion from the facts discovered. The research design was chosen for this analysis because it allows for the least amount of bias and the highest level of information reliability. When a study has to draw conclusions from a wider population, this method is sufficient (Kothari, 2004).

Additionally, the survey obtained data, which was analyzed, patterns extracted and comparisons created. This approach was thought to be acceptable as a result of subject events or conditions that already existed. This concept prompted the researcher to settle on the look and from this analysis queries were answered.

There are two types of standards that exist in research studies, this include; “phenomenological” also known as qualitative analysis and “positivist” also known as quantitative analysis. ; Consistent with Collis and Hussey (2003), qualitative analysis is a general term for varied sorts of informative modes of inquiry unremarkably employed in the social sciences. Phenomenology is instinctive in nature and involves assessing and reflection on different views to realize an understanding of social and human activities. Positivist (quantitative) approach on the opposite hand is delineated as objective in nature and focuses on mensuration phenomena. It involves assembling and analyzing numerical information and using applied mathematical tests. Quantitative analysis includes styles, methods and weights that have prudent numerical or quantitative information. The basic variations between the phenomenological and positivist approaches are the philosophical assumptions within which every manner of investigation works. Mugenda and Mugenda (2003) argues that each approach requests to create a body of information concerning the occurrence.

3.3 Target Population

A population is the item that a researcher is considering in the study (Kothari, 2004). A census inquiry is a detailed description of all the objects in the population. When a research is conducted on the entire population, it is referred to as a census survey, which provides the highest level of accuracy. Whether it is an individual, a group or a community, the study population are the people from whom information is collected (Kumar, 2011). Consistent with Cooper and Schindler, (2008) who state that it is a proper list of concerned participants only. Bordens, (2008) indicated that the analyst should chose an economic sample but should have enough respondents to establish a sound survey and nothing more.

This study was carried out among smartphone users in Nairobi and its environs in order to improve data accuracy by eliminating bias in awareness due to their amount of exposure depending on geographical location. By environs we meant towns just beyond the outskirts of Nairobi, namely Kiambu, Machakos, Narok and Kajiado. The mobile penetration rate in Kenya is 97.8% (Communications Authority of Kenya, [CAK],2018). With the age of smart phone users ranging from 15 years and above it is safe to say they are

the majority of the population. Hence, to calculate the sample size, the research considered the total target population (individuals of 15-65 years) of these selected towns is approximately 4.5 million residents (60% of the population) with a 97.8% mobile penetration rate.

3.4 Sample size

Some populations are too large to even think about utilizing them entirely for research. In such cases, a calculated example is utilized. An example can be characterized as the subset of a population (Hair et al., 2011). Testing is the way toward choosing few people from the population size. This choice is proposed to be a portrayal of the larger group. As with any other model-based data analysis technique, researchers should consider sample size as it relates to the model complexity and data characteristics (Hair et al., 2011).

In this study, the target population, which are smart phone users in Nairobi and the surrounding towns (counties), have a combined population of approximately 4.5 million people, which represents about 10 percent of the total Kenyan population (47,564,296) (Kenya National Bureau of Statistics,[KNBS], 2019). A sample is the number chosen from the population to constitute an effective, representation of that population. Thus, the sample size should not be too limited or too large, but should be the right size (Kothari, 2004).

To calculate the sample size, this study used the finite population sample formula for the sample size n:

$$n = N * X / (X + N - 1),$$

where,

$$X = Z_{\alpha/2}^2 * p * (1-p) / MOE^2,$$

$Z_{\alpha/2}$ is the critical value of the Normal distribution at $\alpha/2$ (e.g. for a confidence level of 95%, α is 0.04 and the critical value is 1.96), MOE is the margin of error, p is the sample proportion and N is the population size. Assuming a sample proportion of 0.5, with 4.5 million as the target population, a confidence level of

95% (where 95% confidence level is 1.96) and 0.4 as the margin of error then 601 becomes the sample size. In this case, the total sample size was 600 respondents. Geographical viability and accessibility was the main reason for the chosen sites.

3.4.1: Sampling Frame

Target population	Target respondents
Target area	Smart phone users
Nairobi City	350
Kiambu town	100
Machakos	60
Kajiado	45
Narok	45
Total	600

3.5 Sampling Technique

The researcher used purpose random sampling to select the respondents. It is a sampling technique in which objects are selected based on the purpose of the study, that is, subjects selected because of some characteristic (Patton, 1990). Random sampling was used because it ensured that each sample had a fair chance of being chosen and allowed for the estimation of sampling error. Furthermore, the samples were dispersed unevenly across Nairobi and the other target counties. There was also a need to sample a diverse group of persons with varying educational backgrounds and ages. Despite the fact that random sampling can provide an accurate picture of the complete population, some respondents may decline to participate in the survey (Kumar, 2011). The study countered this by learning why respondents chose not to respond (Saunders & Rojon, 2014).

3.6 Data Collections Methods

The research was conducted utilizing quantitative and qualitative research approaches on a broad population sample. To explain, anticipate, and control scenarios, the quantitative research method is utilized to show links between variables (Kothari, 2004). The goal of qualitative research is to learn about the sample population's opinions, habits, and attitudes. It provides answers to the questions of what, how and why a phenomenon occurs (Kothari, 2004).

Data collection was done in a systematic way and closely monitored. However, due to the Covid-19 pandemic, most participants were recruited through an email invitation, social media platforms and less physical handouts. Participation in the research was open to users of any mobile platform. Raw data was gathered using a questionnaire, which had both open-ended and closed-end questions. In other situations, online interviews were carried out and questionnaire attachments sent via email. This depended with the type of respondents. The questionnaires were given on a 'drop and pick later' technique or successful email responses from respondents. The instruments were administered personally to ensure return rates.

3.7 Instrumentation

3.7.1 Pilot study

A pilot study is usually the initial step in any research as it helps in planning and modification of the main study. Feasibility studies are routinely performed in many target areas. It is fair to say that every major trial had to start with some piloting or a small-scale investigation to assess the feasibility of conducting a larger scale study (Thabane ,2010)

A trial was done on a small scale to analyze the validity of the study and check the chances of success or failure. The sample size was carefully analyzed against the set objectives and tested using recommended and reliable measuring instruments. A pre-test was conducted before data was collected to test the research instrument before administering them. The study collected data from 25 smart phone users within Nairobi County. This evaluated the significance of the research objectives by checking the comprehensibility of the

research instruments. It also gave the researcher a basic idea of the time to complete the study. The pilot study helped in reducing the risk of errors while saving a lot of time along the way. The validity of any study is key beforehand hence a properly rehearsed trial was highly necessary.

3.7.2 Validity

Validity relies on levels of accuracy of which there is no bias but there is precision - how well the sample represents the population. For small populations, the general rule-of-thumb is that an individual has to have an inexpensive percentage of participants on the lower side except for larger populations. The validation procedure aims to identify any flaws or biases in the technique, as well as their possible impact on the study (Saunders & Rojon, 2014). Validity cannot be measured using any statistical tests. All tests of validity emanated from opinions based on the judgment of the researcher.

However, there were at least two kinds of validity that were checked to assess, these were the face validity, which looked at the chances that a question might be misunderstood or misinterpreted. Pre-testing of survey tools was a great way to increase the chances of face validity and Content validity, which checked whether the tools to be used would provide enough coverage in assessing the determinants of digital credit applications adoption and continuous use in Kenya. To evaluate the accuracy of the tools, the study used a content validity test. The validity of the contents estimates the depth of the indices to which information obtained from a particular tool is determined. It also did this by use of expert opinions drawn from the telecommunications sector, literature searches and pretest of open-ended questions.

3.7.3 Reliability

The researcher, to assess the reliability of the research tools, used the following three basic methods: A test-retest measure was initiated by giving the same tool to the same group of respondents at two different points in time. The degree, to which both administrations were similar, was a measure of the reliability of the instrument.

The third and most desired technique for assessing reliability was by the utilization of proportions of internal consistency. At the point when an instrument incorporates a progression of designs intended to look at a similar build, the inquiries are self-assertively split into two gatherings. The relationship between the two subsets of inquiries is the part half dependability.

3.8 Data Analysis

After fieldwork, before analysis, all questionnaires were properly assessed for reliability and verification. The data was edited, then coding and tabulation was carried out using SPSS. The data was deciphered using qualitative and quantitative method. Qualitative method involves content analysis and evaluation of text material. Quantitative method involves the use of diagrams such as tables and charts.

The information was initially inspected for misinterpretation and commission errors. The data collected was carefully reviewed, verified and compiled. It was then coded and analysed accordingly with a quantitative method in order to generate descriptive statistics. The extensive descriptive analysis preceded inferential analysis. Inferential analysis was done to establish the relationship between the adoption and continuous use of digital credit applications and technological, social and economic factors. Here the study first carried out a correlation analysis to assess the strength of relationship that existed between adoption and its associated determinants using Pearson's product method.

3.8.1 Correlation Analysis

The Pearson's coefficient was used to verify the existence or non-existence of linear correlation between and among the quantitative variables as indicated above. There was some evidence of multicollinearity among the explanatory variables since the correlations among them are strong enough hence, all the variables can be incorporated into the subsequent regression analysis.

Mainly the study was on the dependent and independent relationship and a multiple regression analysis was used. The multiple regression analysis is mathematically expressed as shown below: A multivariate

regression model was applied to determine the relative importance of each of the three variables with respect to the changes in motivation hence the regression model was as follows:

$$Y = \beta_0 + b_1X_1 + b_2X_2 + b_3X_3 + \epsilon$$

Where:

Y = was the value of the Dependent variable that was being explained (Digital Credit Adoption and Use)

β_0 = Y-intercept or Constant Term

$\beta_1, \beta_2, \beta_3$ = are the Slopes for X_1, X_2, X_3 (Beta coefficients)

X_1 = first independent variable that was explaining the variance in Y (Economical factor)

X_2 = second independent variable that was explaining the variance in Y (Social factor)

X_3 = is the third independent variable that was explaining the variance in Y (Technological factor)

ϵ = Constant error

The contents in the model begun with the response or dependent variable Y, which is the variable of interest in the equation then the Y-intercept β_0 , which anchors the regression line properly. The other significant participant is the explanatory variable X which is the independent variable and greatly affects the response variable. They are all measurable except the residual error 'e', which is an unmeasured variable.

3.9 Ethical Issues

The researcher ensured that the study was done in an ethical manner. The study was first presented to computer science department at KeMU before being approved through Ethical Clearance Certificate No. CIS-3-1905-3/2017. The researcher then applied for a permit to carry out the research from National Council of Science, Technology and Innovations (NACOSTI), which permitted the research to be conducted under

issuance of permit no. NACOSTI/P/19/2983. During data collection, participants were allowed to ask questions and clarify elements that were not very clear for their own comfort. The study ensured that the data gathered from the respondents was anonymous and secure. Participants were not required to write their names on the questionnaire to ensure confidentiality and prevent disclosure of identity.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter discussed the analysis, interpretation and presentation of data collected on the determinants of digital credit applications adoption and continuous use in Kenya. This study made use of frequency tables, percentages, mean and standard deviation to present data. A pre-test was done on a sample population similar to the target population in order to assess the validity and reliability of the data. Items, which were not applicationropriate for measuring the variables, were adjusted to improve the quality of the research instrument thus increasing its validity and consistency. The data collected from pilot study was used to compute the reliability of the instruments. Descriptive statistics was used to describe the studied items measuring the variables. The findings are then presented in form of tables as given in the following subsections.

4.2 The Response Rate

The study targeted 600 respondents from Nairobi county and its environs. From the study, 420 respondents out of the 600 sample respondents filled-in the questionnaires making a response rate of 70%.180 questionnaires were not returned making a 30% non-response. This reasonable response rate was achieved after this study made physical visits to remind the respondents to fill-in the questionnaires. Based on this assertion, the study then concluded that the response rate was high enough and that it would produce good, accurate and credible results.

Table 4.1:

Response Rate

	Frequency	%Response rate
Non response	180	30%
Actual respondents	420	70%
Targeted respondents	600	100%

4.3: Demographic data

4.3.1 Gender of respondents

The study requested the respondents to provide demographic information in terms of gender, age and educational level. It was established from the study that 44.3% of the respondents were female while 55.7% of the respondents were male. This indicates that both genders are well represented although the males tended to dominate. This information is given on table 4.2.

Table 4.2:

Gender of Respondents

Valid gender	Frequency	Percent	Valid percent	Cumulative percent
Male	234	55.7	55.7	55.7
Female	186	44.3	44.3	100
Total	420	100	100	

4.3.2 Age group of the respondents

It was established from the study that most of respondents were in the age bracket of 30-39 years represented by 38.6%, followed by those who were between the age bracket of 24-29 years who formed 24.3% of the respondents then followed by the age bracket of 40-50 years who comprised 20.0% of the total number of the respondents. 17.1% of the respondents were above 50 years. It can be deduced that those who were at the age bracket of between 30-39 years participated more.

Table 4.3:

Age of Respondents

Age	Frequency	Percent	Valid Percent	Cumulative Percent
24 – 29 years	102	24.3	24.3	24.3
30 – 39 years	162	38.6	38.6	62.9
40 – 50 years	84	20.0	20.0	82.9
Over 50 years	72	17.1	17.1	100.0
Total	420	100.0	100.0	

4.3.3 Education Level

The results in the table indicate that majority of the respondents were university graduates representing 74.4% of the total participants. This also included the tertiary colleges. Those who had reached the secondary school level constituted 15.6% of the respondents while the least were the respondents who had primary school education only representing 10% of the respondents. This indicates that the majority of the respondents had acquired satisfactory education to be able to fill in the questionnaires.

Table 4.4:

Education level

	Frequency	Percent	Valid Percent	Cumulative Percent
University level	312	74.4	74.4	74.4
High school level	66	15.6	15.6	90
Primary school level	42	10	10	100.0
Total	420	100	100	

The results indicate that a majority of the participants had achieved some level of education. Degree level (74.4%), High school (15.6%) and primary level (10%) hence were in a position to adequately respond to any questions asked.

4.4 Descriptive Analysis

The research data was collected using a structured questionnaire that was analyzed based on the set objectives to produce descriptive statistics that were used to describe the properties of the study variables and how the independent variables related to the dependent variable.

The study first obtained the means and standard deviations for each of the study variables; economic influence on digital credit applications use, technological influence on digital credit applications use, social influence on digital credit applications use and adoption and use of digital credit applications using the indicators of each variable. The mean values obtained for the independent variables were regressed against the mean for the dependent variable using multiple regressions.

4.4.1 Economic factors

Table 4.5:

Economic influence on digital credit applications use

	Mean	Std. Deviation
1. The amount of time taken in processing a mobile loan is fair	3.99	1.056
2. The amount of money spent processing a mobile loan is satisfactory	4.46	.973
3. Mobile loan evaluation process is adequate	2.59	1.268
4. The percentage interest rate application lied on a loan is fair	3.64	.817
5. The fee charged on a defaulted laon is fair	3.01	.985
6. The mobile loan interest rates are very competitive	2.91	.944
7. Before proceeding with an application am aware charges	3.99	1.056
8. Before application lying for a mobile loan am aware of the interest rates.	3.59	.893
9. Before proceeding with the mobile loan application am aware of the period	4.03	1.035
10. Before application lying for the loan am fully aware of the total amount payable	4.11	.986
11. Before application lying for the loan am aware of the consequences of defaulting	3.76	.624
12. There are set government policies for dealing with mobile loans	2.07	1.289
13. The government is active in monitoring digital loans	1.60	1.134
14. Tariffs initiated by the government are fair	4.54	1.017
15. The ability to access digital loans helps reduce financial strain.	4.60	.824

The study sought to establish the respondents' views on economic factors in the use of credit application. The respondents agreed to a very great extent with the statement that access to mobile loans generally helped relieve them from some financial strain as a mean of 4.60 was obtained. The respondents further agreed to a great extent on the statement that the cost of processing a mobile loan is satisfactory as a mean of 4.46 was obtained. It was also established from the study that the respondents agreed to an extent on the issue of the period taken in processing a mobile loan being fair as a mean of 3.99 was obtained. The respondents agreed

to a great extent on the fact that by the time they are making the decision to get digital credit, they are usually aware of the applicationraisal charges as a mean of 3.99 was obtained. On the issue of the interest rate charged on the mobile loans being fair, a mean of 3.64 was obtained and this indicated that the respondents agreed to some extent. It was also indicated that the respondents agreed to some extent on the fact that by the time they made the decision to get digital credit, they were aware of the interest rates as a mean of 3.59 was obtained. The respondents, to a small extent, agreed on the fact that the interest rate charged on the mobile loans was satisfactory as a mean of 3.01 was obtained. On the respondents' response about the interest rate charged on the mobile loans being competitive, they almost disagreed as a mean of 2.91 was obtained. They also had an issue on the the evaluation process of a mobile loan application being competitve as a mean of 2.59 was obtained.

However, with a mean of 1.60 obtained, the respondents tended to almost disagree on the statement that the government is active in setting up regualtions for mobile loans. The respondents agreed largely on the issue of the government's tax tariff on mobile loans being sufficient as a mean of 4.54 was obtained.

On the matter of applicationlicants being aware of the total amount payable by the time they were making the decision to get digital credit, a mean of 4.11 was achieved and this indicated the respondents agreed to a large extent. The respondents agreed to a great extent on the fact that by the time they were making the decision to get digital credit, they were usually aware of the payment period as a mean of 4.03 was obtained. On the respondents' response about the government, establishing policies for mobile loans, they tended to disagree or agreed to a very small extent as a mean of 2.07 was obtained. Finally, the respondents also agreed to a great extent agreed on the fact that by the time of making the decision to get digital credit, they were usually aware of the consequences of defaulting as a mean of 3.76 was obtained.

4.4.2 Social factors

Table 4.6:

Social influence on digital credit applications use

	Mean	Std.
1. My colleagues feel I should use the mobile loan service.	3.83	1.179
2. Close family members feel that I should use the service	3.10	1.038
3. Close friends feel that I should use the digital loan service	3.63	1.066
4. The use of mobile loans has affected my public image negatively	4.16	1.211
5. My personal bankers feel I should consume the digital loan product	4.11	.956
6. Enlisting and using several loan applications helps ease my operations.	4.10	.663
7. Time is easily managed by using mobile loan applications.	3.87	.448
8. My financial savings have been affected negatively by using the digital loan applications.	4.10	.663
9. My financial credibility has been improved by timely repayments.	4.49	.654
10. My overall financial planning has been affected negatively by	4.16	.828

The study sought to determine the level of respondents' agreement to the social influence on digital credit applications use. On the statement, that timely mobile loan repayment helped build their financial credibility, the respondents, indicated that they agreed to a great extent as a mean of 4.49 was obtained. A mean of 4.16, which indicated that the respondents agreed largely that digital credit loans had negatively affected their image to friends and acquaintances, was obtained. The respondents agreed to a big extent on the issue that their banks thought that they should be using mobile loan applications more regularly as a mean of 4.11

obtained. It was also determined from the study that the respondents agreed to a great extent on the statement that digital credit had negatively affected their general financial planning as indicated by the mean of 4.16.

It was also determined that the respondents agreed to a small extent on the statement that their colleagues thought that they should make use of mobile loan applications regularly as a mean of 3.83 was obtained. The respondents almost disagreed on the view that their family members thought that they should use mobile loan applications as a mean of 3.10 was obtained. They also had an issue with the view that their friends thought that they should be using mobile loan applications having a mean of 3.63. Though they agreed to a large extent that using multiple mobile loan applications made them perform their financial obligations more efficiently as a mean of 4.10 was received.

4.4:3 Technological factors

Table 4.7

Technological influence on digital credit applications use

	Mean	Std.
1. It is easy to configure the mobile loan applications on my	2.73	1.006
2. It is easy to use the mobile loan applications on my	4.46	.502
3. It is easy to repay my loans from the digital loan	4.20	.403
4. The price and stability of the internet is sufficient	2.59	1.268
5. The mobile loan application is easily accessible for	2.07	1.289
6. The mobile loan application is very user friendly.	4.16	.470
7. My gadget is compatible with most loan applications.	4.69	.956
8. Most of my financial obligations are easily sorted by the digital loan applications.	3.93	1.068
9. If I know that my personal information is secure I can easily use any mobile loan application.	4.69	.956
10. Providing extra information to service providers is not necessary.	4.16	.470
11. There is a chance that a system error could occur during application.	3.83	1.179
12. The mobile application has a very efficient help line system.	3.93	1.068

On the statement, that most mobile loan applications are compatible with most smart phones, the respondents, indicated that they agreed to a very great extent as a mean of 4.69 was obtained. The respondents also agreed to a very great extent on the statement that they could use the mobile loan applications if they are confident that the private information in the mobile loan application system is secure. as a mean of 4.69 was obtained. They agreed to a great extent with the issue that it was easy for them to

develop the skills needed to use the mobile loan applications service as a mean of 4.46 was obtained. A mean of 4.20, which indicated that the respondents agreed they believed it was easy to learn and use Mobile loan applications for loan repayment. The respondents also agreed largely with the statement that they do not feel completely obligated to provide extra information through the mobile loan applications system as a mean of 4.16 was obtained. However, the respondents tended to disagree concerning the issue that downloading the mobile loan application was easily accessible and affordable for them as a mean of 2.07 was obtained. It was also indicated that the respondents also agreed to a small extent on the statement that online assistance was easily accessible using the mobile loan applications system as a mean of 3.93 was obtained. A mean of 2.59 obtained showed that the respondents agreed to a very small extent on the statement that the mobile internet service was affordable and stable enough for them. Connectivity has become one of the key aspects for improving efficiency in mobile loan disbursement. It was determined that the respondents to a small extent agreed on the statement that the setup and configuration of the mobile loan applications is easy for them as a mean of 2.73 was obtained. They also agreed to some extent with the issue that they are worried there is a likelihood an error will happen with the mobile loan applications system during processing as a mean of 3.83 was obtained.

4.4:4 Intention to adopt and use digital credit applications

Table 4.8

Digital credit applications adoption and use

	Mean	Std.
1. My intention is use mobile loan applications presently and in the future frequently.	3.84	.828
2. I will sample the various mobile application offerings more frequently.	4.54	.774
3. My financial situation will determine how and when I will use the various mobile loan applications available.	4.24	.842

In addition, a mean of 3.84 was achieved when respondents tended to agree on the fact that they intend to use mobile loan application services more frequently now and in the future. They also agreed largely on the statement that they would try different types of mobile loan application services conveniently as indicated by the mean of 4.54. Finally, the respondents also agreed to a great extent on the statement that they will carefully assess their financial situation against available digital credit options in future as a mean of 4.24 was obtained.

4.5 Inferential Analysis

The study sought to establish whether the independent variables; economic influence, social influence and technological influence on digital credit applications use would suitably estimate dependent variable; Intention to adopt and use digital credit applications in Kenya. This by testing for an existence of a significant relationship between, technological, social and economic factors determining the adoption and continuous use of digital credit applications. The study therefore carried out a correlation analysis and multiple regressions on the study variables using the indices obtained for all the variables.

4.5.1 Correlation Analysis

Table 4.9

Pearson Correlation

	Y	X₁	X₂	X₃
(Y) Digital Credit Adoption and Use	1.000	.585**	-.144	.452**
(X₁) Economic factor		1.000	.007	.368**
(X₂) Social factor			1.000	.373**
(X₃) Technological factor				1.000

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

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

The results of correlation analysis in table 4.10 show that, using Pearson’s product method and under 5% level of significance. Two of the independent variables; economic factor ($r = 0.585$, $p < 0.05$) and technological factor ($r = 0.452$, $p < 0.05$) were significantly related to digital credit adoption and use. The result show that economic factor ($r = 0.585$) had the highest relationship with digital credit adoption, followed by technological factor ($r = 0.452$) but social factor ($r = -0.144$) had little significance. The relationship between each of the independent variables were also considered. Economic factors and social factors ($r = 0.007$) was very small as the correlation coefficient (r) was very low. The connection between social factors influencing digital credit adoption and use was very small. The research continued to evaluate the research model using various regression, as it showed a substantial relation between the independent and the dependent variable; technology acceptance and economic factors.

4.5.2 Regression Model

Multiple regression was then carried out on the independent variables against the dependent variable (intention to adopt and use digital credit applications in Kenya) to estimate the model, since they had shown to have had significant relationships, the regression equation:

$$Y = \beta_0 + b_1X_1 + b_2X_2 + b_3X_3 + \epsilon$$

Where:

Y = was the value of the Dependent variable that was being explained (Digital Credit Adoption and Use)

β_0 = Y-intercept or Constant Term

$\beta_1, \beta_2, \beta_3$ = are the Slopes for X1, X2, X3 (Beta coefficients)

X₁= first independent variable that was explaining the variance in Y (Economical factor)

X₂= second independent variable that was explaining the variance in Y (Social factor)

X₃= is the third independent variable that was explaining the variance in Y (Technological factor)

ϵ = error of prediction

The results were captured in table 4.10

Table 4.10***Regression Model***

Model	Unstandardized		Standardized		t	Sig.
	Coefficients		Coefficients			
	B	Std. Error	Beta			
1 (Constant)	1.223	.520			2.354	.022
Economic	.362	.080	.439		4.550	.000
Social	-.207	.068	-.296		-3.059	.003
Technological	.580	.151	.401		3.850	.000

Dependent Variable: Digital credit adoption and use

Unstandardized Coefficients are $\beta_0 = 1.223$, $\beta_1 = 0.362$, $\beta_2 = -0.207$, $\beta_3 = 0.580$ hence the prediction equation: $Y = 1.223 + 0.362X_1 + -0.207X_2 + 0.580 X_3$

Where

Constant = 1.223,

shows that if all three independent variables (Economic, social and technology) were all rated as zero changes in the determinants of digital credit applications adoption and use the value would be 1,223.

$X_1 = 0.362$, If X_2 and X_3 remain the same, this shows that for each extra unit increase in economic factors results in 0.362 increase in the determinants of digital credit applications adoption and use.

$X_2 = -0.207$, If X_1 and X_3 remain the same, this shows that for each extra unit increase in social factors results in -0.207 increase in the determinants of digital credit applications adoption and use.

$X_3 = 0.580$, If X_1 and X_2 remain the same, this shows that for each extra unit increase in technological factors results in 0.580 increase in the determinants of digital credit applications adoption and use.

The coefficients table above presented the optimal weights of the regression model. The difference between non-standardized and standardized regression is that standardized regression does not have a constant. This means that for each item of data, the mean is subtracted and the result divided by the standard deviation.

All values of X and Y under the beta column of the standardized coefficients have been set to a mean of zero and standard deviation of one. In this case, the value of β_0 is zero and is excluded from the equation.

The Coefficients table gives us the necessary information to predict the determinants of digital credit applications adoption and use from economic, social and technological factors as well as determine whether X_1 , X_2 and X_3 contribute significantly to the model. Because the significance levels are less than alpha, taken to be .05, then the model was a good fit significantly predicting determinants of digital credit applications adoption and use from economic, social and technological factors.

Table 4.11

Regression Results of significant study Variables

		Change Statistics						
R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
.693 ^a	.480	.457	.47011	.480	20.327	3	66	.000

Predictors: (Constant), Economic, Social and Technological

R is the multiple correlation coefficient. This means that it's the correlation coefficient between the observed values of Y and the predicted values of Y hence its value will always be positive and will be between 0 and 1. The nearer the value of R is to 1 the greater the correlation between the independent and dependent

variables. In this case, the value for the multiple R when predicting Y from X₁, X₂ and X₃ is 69.3%, a high value indicating a high degree correlation between the dependent and independent variables.

R² is called the coefficient of determination. It indicates how much of the total variation in the dependent variable, Y, can be explained by the independent variables, X₁, X₂ and X₃. In this case, 48.0% of the variance in the measure of digital credit applications adoption and use can be predicted by measures of economic, social and technological. This is not a high figure but an average degree of correlation.

The research used the Table 4.11 results to determine the significance of the dependent variable on the independent variables. The results, $t = 20.327$ and $p\text{-value} = .000$, are indications that the p-value of economic factors does not exceed 0.05. This is an indication that at $\alpha = 0.05$ economic factor is useful as a predictor for digital credit adoption. The results in table 4.11 show that the coefficient of determination (indicated by R₂) was .480, an indication that 48% of variation in digital credit adoption and continuous use is explained by; economic, technological and social factors. In a summary, economic, technological and social factors could significantly predict the adoption and continuous use of digital credit applications in Kenya.

Table 4.12:

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.477	3	4.492	20.327	.000 ^b
	Residual	14.586	66	.221		
	Total	28.063	69			

a. Dependent Variable: Digital credit adoption and use

b. Predictors: (Constant), Economic, social and technological

Using the model equation, the study obtained the Analysis of Variance (ANOVA) results, testing for goodness of fit of the study model. The ANOVA table shows that the model can predict digital credit applications adoption and use using predictor variables. The Sig. column is .000^b. This shows that the statistical significance of the regression model that was run, which is less than 0.05, significantly predicts the outcome variable. The model is a good fit for the data. The sum of Squares for the residual, 14.586 is the sum of the squared residuals. The mean square residual, 0.221, is the squared standard error of estimate. The total sum of squares, 28.063, is the sum of the squared differences between the observed values of Y and the mean of Y.

The regression coefficients (beta-coefficients) were used to interpret the goodness of fit at 0.05 significance level. when all the regression coefficients are zero (i.e. $\beta_1 = \beta_2 = \beta_3 = 0$) then the model is fit otherwise if any of the regression coefficients is not zero ($\beta_1 \neq 0$) then the model is fit for explaining the adoption and continuous use of digital credit applications in Kenya. The results in Table 4.11 show that p-value = .000 and since p-value < 0.05, indicating that at 5% significance level, at least one of the predictors; economic, technological and social factors are useful in predicting the adoption and continuous use of digital credit applications in Kenya.

4.6 Discussion of Findings

The study reveals that most of the smart phone users have had digital innovations experience and have adopted digital solutions in varying aspects. Dominant areas of innovations are seen through mobile commerce, internet banking and digital marketing. The analysis realized that the innovations have been mainly used to generate new forms of revenue, influenced communication and connectivity (through networked personal devices) and have created new avenues for accessing quick credit. Financial technologies (fintech) acceptance theory implies that individual clients appreciate the value of financial technology in today's business.

On financial inclusion, the study established that the adoption of digital innovation has greatly influenced the access to financial services. Majority of the respondents indicated that new technology had largely influenced the use of digital financial offerings. This shows that financial institutions and fintech service providers with ready access to online mobile resources are more likely to take up innovations in digital technology. In the findings, it was revealed that financial inclusion and financial access are a serious concern hence majority of Kenyan's have gone the digital way. Financial technologies are now a way of life. Customer driven efficiencies in processes and delivery of products and services is what makes financial institutions adopt digital innovations (Broeders & Khana, 2015). The analysis revealed that gadgets running on the mobile network had taken up nearly 49% of the financial sector. This means that financial institutions realize the real value of financial technologies and appreciate the presence of the ever-growing digital economy as shown by the measures of the technological variable. On the other hand, the study established that economic issues greatly influenced the adoption and continuous use of digital credit. A large majority of the respondents indicated that their economic situations contributed to the adoption and use of digital applications to borrow money. This was clearly indicated from the correlation analysis, which showed that the economic variable had a very significant correlation with dependent variable (.585**). A substantial number of respondents did not agree with the use of digital credit to gain a social standing. This was indicated by the different test results that repeatedly indicated little or no significance between the social

factor and dependent variable (-.144). Respondents also agreed that their image was dented when close friends and colleagues had knowledge that they had borrowed money digitally (M=4.16, SD=1.211).

The research study further reveals that dynamics in economic environment combined with technological changes greatly determine the adoption of financial technologies. The results in table 4.11 show that the coefficient of determination shown by R² was 48% of variation in digital credit adoption and continuous use is explained by; economic, technological and meagerly by social factors. This shows that economic, technological and social factors were significant determinants of digital credit applications adoption and use in Kenya. The study also revealed that mobile technologies had helped capture a larger market and greatly assisted in achieving an overall goal of financial inclusion. This was indicated by the fact that every respondent was accessing some sort of financial services via their gadgets. Another revelation was the opening up of new sources of funds through value added fee based services. This is because the respondents agreed to a great extent on the fact that the cost of processing a mobile loan was satisfactory and it was also established that the respondents agreed on the issue of the period taken in processing a mobile loan being very fair (M=4.46, SD=0.973).

It was also established that the new financial digital innovations had greatly improved customer connectivity hence improving customer care and the overall banking experience. This was indicated by the fact that the respondents agreed to a some extent that online assistance was easily accessible using the mobile loan applications system (M=3.93, SD=1.068). Finally, the results of regression of all study variables indicated that the technological factor contributed to adoption and continuous use of digital credit applications in Kenya as the relationship was statistically significant ($\beta_3=0.580$, $p=.000$) while the economic factor also had some significant influence on the dependent variable ($\beta_1=0.362$, $p=.000$). The findings reveal that the stated variables had a positive influence on the dependent variable because $p\text{-value} = .000$ and since $p\text{-value} < 0.05$, it indicates a 5% significance level meaning that at least one of the predictors; technological or economic factors are useful in predicting the adoption and continuous use of digital credit applications in Kenya.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section talks about the synopsis of the critical discoveries along the investigation targets and corresponding research questions. It then deduces presumptions dependent on these discoveries and conversations are put forward for the recommendations of the research in both application and approaches therein. Finally, the sections presents the restrictions and proposals for further assessment.

5.2 Summary of the Study Findings

The study sought to establish the respondents' views on economic, social and technological factors in determining digital credit applications adoption and continuous use in Kenya. The respondents agreed largely on the fact that financial capabilities have significant implications on our economic status, which can be reduced by digital credit. The respondents also agreed largely with the fact that digital credit offer financial technologies that bring easily accessible monetary services that enhance efficiency in running the day-to-day activities. They also agreed that in our current economic environment, the capability to counter the rapidly changing monetary needs is the main competitive differentiator, which can be enhanced by efficient mobile money services. The key discoveries outlined from the distinct objectives are as follows:

5.2.1 Economic factors

The study established that digital credit applications have enhanced and improved the economic status of many middle income and low income individuals by offering easy financial access. The respondents agreed that the cost of processing a mobile loan is was very fair and that interest rate charged considering the risks the lender is going against was also reasonable. The research study also indicated that financial inclusion was greatly optimized and resource utilization by provision on demand have come a long way in improving the livelihoods of clients in the SME sector. The study also revealed the financial implications on individuals as most respondents admitted that the period set by most FinTech firms was not sufficient for their economic turnaround. With high interests charged in such a short lending period making the loans somewhat expensive

though convenient. Also as a conclusion, it was viewed that these financial institutions were using digital innovations as a means of survival amidst heavy competition or just strengthening their position in the market.

5.2.2 Social Factors

The study found out that a majority of the respondents agreed to a very great extent that as much as digital credit helps lift the economic burden of individuals it does not improve their social standing. They also agreed that mobile technology facilitates virtual collaboration with their respective financial partners as the respondents clearly stated that most of their bankers encouraged the use of digital loan applications. Another issue that also came up was the applications most respondents, both banked and unbanked, used were not from established banking institutions. Institutions such as Commercial Bank of Africa's Mshwari, Barclays' Timiza, Kenya commercial Bank's KCB Mpesa or Eazzy Plus from equity bank but from fin tech firms such as Tala, branch and Okash due to authentication issues. However, most of the working middle class individuals of the ages 30 and above had a high response rate towards only using applications from banks.

From a social stand point, the reasons for borrowing were also diverse but a large number of respondents indicated that they borrowed money for domestic reasons such as rent payment, school fees clearance, domestic shopping, transport and in some rare cases medical emergencies. The group in this category were mostly individuals in the corporate world ranging between ages 30-45 years. However, some respondents borrowed for leisure such as gambling, restaurant bills and other forms of entertainment. In general, digital credit is not yet a prestigious service offering as a normal bank loan as many respondents had an issue admitting they subscribe to any of these applications.

5.2.3 Technology

From the study, it was a general agreement that mobile loan technology had the ability to respond to rapidly changing customer needs, which is a key competitive differentiator. It also simplifies the complexity of traditional financial services and institutional operational processes. It was greatly noted that the new

technology helped financial institutions spend less time looking for clientele and helped reduce capital investments. Despite the security issues some respondents had clearly pointed out which are mostly inclined towards personal identity and privacy concerns, the technology is a great addition in the finance sector. Many respondents appreciated the applications availability, compatibility, practicability and ease of use as shown from the response rate.

As a whole, the respondents agreed to a great extent with fact that mobile computing was well suited for a wider range of individuals with the majority being unbanked. The technology is also manages to finish tasks at high speed while processing vast amounts of data with minimum resource allocation.

5.3 Conclusions of the Study

Based on the study findings, digital credit applications adoption and continuous use is eminent. The study concludes that economic factors are very influential in determining the adoption and continuous use of digital credit applications. The correlation analysis shows that it has a significant influence of 0.585 on digital credit adoption and use. This shows that most respondents borrow mobile loans to better their economic conditions.

Technology is also a relatively key factor in determining the adoption and continuous use of digital credit applications in Kenya. The correlation analysis shows a significance of 0.452 owing to the fact that there was still very slow acceptance of the technology and reluctance to fully incorporate it in the operational processes. When in proper use, the applications used in managing mobile loan technologies can enable a wider client reach as well as streamlined processes in acquiring a credit facility.

Then the study shows that the social factor in determining the adoption and continuous use of digital credit applications in Kenya had a minimal significance. The analysis shows a significance of -0.144 probably because most respondents felt that having a digital credit facility negatively affected their social status and even admitted to not using some applications from small fin tech firms. Once these issues become the norm

then we could have more individuals openly acquiring facilities and strive to avoid being blacklisted in the credit reference bureau.

According to the results, all of the determinants of digital credit application adoption and continued usage were significant and were key factors in the adoption of digital technologies in the Kenyan economy. The report also concludes that technological advances are a significant factor in the acceptance of digital technologies. This could happen in one of two ways: financial institutions exploiting technical advances to enhance their operational functions, or financial institutions facing the difficulties of outdated technology due to continuous improvements in software and hardware. There may also be data protection concerns, causing financial institutions to be reluctant to embrace digital technologies.

The report also concludes that financial firms have been pushed to implement digital technologies due to changing consumer behavior. When convergent competition uses technology to operate more efficiently and effectively, financial institutions have no choice but to incorporate digital technologies to stay competitive or establish collaborations. Some companies have gone ahead and implemented digital technologies in order to reposition themselves in the market. The pursuit of new sources of credit and revenue growth is a valid determinant in the adoption of digital technologies, according to this report. Individuals are looking for innovative ways to get credit through value added services, fees, and new revenue from digital goods.

These shifts have compelled consumers to embrace digital technologies in order to meet personal and general expectations complying with their desires. They effectively combine to help determine the adoption and continuous use of digital credit applications in Kenya.

5.4 Recommendations

From the study, the researcher recommends that the Kenya government and the finance sector should compile and put in place a formidable digital credit and mobile money policy to act as a guide. Then, financial institutions should be quick to adopt the digital or mobile credit technologies as this will contribute largely in technological advancement and outreach, enhance operational efficiency in terms of credit

disbursement and drastically improve the economic status for majority of the citizens. This means that it will help reduce the bureaucratic processes happening in many financial institutions that go a long way in managing to deny people these credit facilities. This technology is in its most basic form, an easier way of reaching and monitoring a majority of the individuals who lack financial inclusion including access to the most basic financial services.

According to the findings, financial institutions should set aside funds and invest in the adoption of digital technologies. Financial institutions should seek expert advice on a regular basis, conduct research on disruptive financial technology developments, and regularly review their technology to avoid the risks of outdated software and hardware, according to the report. Until introducing digital technologies, data and information security should be taken into account. Despite being rivals, financial institutions should look for ways to collaborate or share ecosystems in the implementation of digital technologies for the entire financial services industry's systemic advances.

This study suggests that financial institutions adopt market analysis and intelligence to keep up with evolving consumer tastes so that they can satisfy those preferences using digital technologies. Many that have already embraced digital technologies should stay current in order to avoid falling behind their customers in terms of technological advances. To increase their revenue streams and income, financial players should develop and deploy web-based products and services, as digital technologies offer productivity and convenience in revenue collection. The government should assist Kenyan financial institutions in adopting digital technologies, given the crucial role that digital innovations play in the financial sector. This will not only boost the operating efficiency of financial institutions, but it will also contribute to growth in the financial services sector, which will help Kenya achieve its Vision 2030 goals for economic growth and financial inclusion.

Stakeholders should collaborate with the financial services sector to develop a system that can be used by businesses looking to implement digital technologies. The government should also encourage the adoption

of digital technologies by enhancing internet access, cell phone infrastructure, and online security. Finally, it is recommended that to be relevant in the digital space, financial institutions and their customers must be aware of these determinants and align their strategies to them.

5.5 Recommendations for further study

The aim of this study was to look into the factors that influence the adoption and continued usage of digital credit applications in Kenya. More research can be done to gain a wider perspective that will aid in the generalization of key determinants of digital innovation adoption across industries. This is because each industry has its own structure, systems, culture, processes, leadership, capabilities, resources, and goals. The study's findings also revealed that there are other factors that influence the adoption of digital innovations that were not considered in this study. To make this list more comprehensive, more research is recommended.

Furthermore, research that is more systematic may be conducted to objectively evaluate the styles and intensity of use of new digital technologies, as well as to determine whether there are distinct determinants and differences in adoption and continuous use by individuals and the industry as a whole. Finally, the study further recommends that more research be done in different geographical areas and for a longer period to verify the study results. The study also recommends extra scrutiny on specific individual variables, to enhance deep and thorough understanding of the motivating factors that determine the adoption and continuous use of this expensive and unregulated loan facility.

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APPENDICES

APPENDIX I: Letter of Introduction

Date.....

The Officer in Charge

.....

P.O Box

.....

Dear Sir/Madam,

RE: ACADEMIC RESEARCH PROJECT

I am a Masters student at the Kenya Methodist University. I wish to conduct a study on the determinants of digital credit applications adoption and continuous use in Kenya and your institution is among the samples that are meant to facilitate the collection of the necessary information for the success of this research. A questionnaire will be used to gather relevant information to address the research objectives. The purpose of writing to you is to kindly request you to grant me permission to administer the research questionnaire.

Please note that the study will be conducted as an academic research and the information provided will be treated in strict confidence hence strict ethical principles will be observed to ensure this with no victimization.

Your acceptance will be highly appreciated.

Yours Sincerely,

Josephat Nyongesa

Appendix II: Questionnaire

MOBILE CREDIT APPLICATIONS ADOPTION

Determinants of mobile credit applications adoption and continuous use in Kenya questionnaire

Instructions:

The purpose of this study is to examine external (economical, technological and social) and internal (individual). Please answer all questions to the best of your ability . there is no right or wrong answers. What matters is your personal opinion. The survey should take applicationroximately 20 mintues. Thank you for taking the time to complete this questionnaire . please rate the extent tio which you agree with each statement below. Place a √ or circle around the numeric value corresponding to your personal opinion on one option for each statement.

KEY : 1:Strongly disagree,,,,,,,,,,,,,,,,,,,,, 5: Strongly Agree					
Economical	Strongly disagree	Moderately Disagree	Undecided	Moderately Agree	Strongly Agree
Mobile Credit Processing					
MC1- The period taken in processing a mobile loan is fair	1	2	3	4	5
MC2- The cost of processing a mobile loan is satisfactory	1	2	3	4	5
MC3- The evaluation process of a mobile loan application is competitve	1	2	3	4	5
Interest Rate					
IR1-The interest rate charged on the mobile loan is satisfactory	1	2	3	4	5
IR2- The penalty charged on the defaulted mobile loan is fair	1	2	3	4	5
IR3-The interest rate charged on mobile loans is competitive	1	2	3	4	5

Awareness										
AW1- By the time I am making the decision to get digital credit, I'm usually aware of the applicationraisal charges	1	2	3	4	5					
AW2- By the time I am making the decision to get digital credit, I'm usually aware of the interest rates.	1	2	3	4	5					
AW3- By the time I am making the decision to get digital credit, I'm usually aware of the repayment period	1	2	3	4	5					
AW4- By the time I am making the decision to get digital credit, I'm usually aware of the total amount payable	1	2	3	4	5					
AW5- I believe access to mobile loans generally helps relieve me from some financial strain.	1	2	3	4	5					
Government Regulations And Policies										
GP1-The government has established policies for mobile loans	1	2	3	4		Strongly disagree	Moderately Disagree	Undecided	Moderately agree	Strongly Agree
GP2-The government is active in setting up regualtions for mobile loans	1	2	3	4						
GP3-The government tax tariff on mobile loans is sufficient	1	2	3	4						
<u>SOCIAL</u>										
Social Network										
SN1- My Colleagues think that I should make use of mobile loans applications regularly.	1	2	3	4	5					
SN2- My Family thinks that I should use mobile loans applications	1	2	3	4	5					
SN3- My friends think that I should be using mobile loan applications	1	2	3	4	5					
SN4- Digital credit loans have negatively affected my image to friends and acquaintances	1	2	3	4	5					
KEY : 1: Strongly disagree,,,,,,,,,,,,,,,,,,,,,,,,,,,,, 5: Strongly Agree										
Performance Expectation										
PE1- My bank thinks that I should be using mobile loan applications regularly	1	2	3	4	5					

Place a tick √
or circle
around

PE2- Using multiple mobile loan applications makes me perform my financial obligations more efficiently.	1	2	3	4	5
PE3- Using mobile loan applications would help save time so that I can do other activities in my day to day.	1	2	3	4	5
PE4- Digital credit has negatively affected my ability to save financially.	1	2	3	4	5
PE5- Timely mobile loan repayment helps build my financial credibility.	1	2	3	4	5
PE6- Digital credit has negatively affected my general financial planning.	1	2	3	4	5
TECHNOLOGICAL					
Ease of Use					
EU1- The setup and configuration of the mobile loan applications is easy for me.	1	2	3	4	5
EU2- It is easy for me to develop the skills to use the mobile loans applications service.	1	2	3	4	5
EU3- I believe that it is easy to learn and use mobile loan applications for loan repayment.	1	2	3	4	5
EU4- The mobile internet service is affordable and stable enough for me	1	2	3	4	5
EU5- Downloading the mobile loan application is easily accessible and affordable for me.	1	2	3	4	5
EU6- My interaction with the mobile loan applications service is friendly and direct.	1	2	3	4	5
EU7- Most mobile loan applications are compatible with my smart phone.	1	2	3	4	5
EU8- I find it easy to access mobile loan applications to perform most my financial obligations.	1	2	3	4	5
Percieved Security					
PS1- I could use the mobile loans application if I am confident that the private information in the mobile loan application system is secure	1	2	3	4	5
PS2- I don't feel completely obligated to provide extra information through the mobile loan applications system.	1	2	3	4	5
PS3- I am worried that there is a likelihood an error will happlicationen with the mobile loan applications system during processing.	1	2	3	4	5

PS4- Online assistance is easily accessible using the mobile loan applications system.	1	2	3	4	5
Intention to Adopt					
INT1: I intend to use mobile loan application services more frequently now and in the future.	1	2	3	4	5
INT2: I will try different types of mobile loan application services conveniently.	1	2	3	4	5
INT3: I will carefully assess my financial situation against available digital credit options in future.	1	2	3	4	5

[C] MOBILE LOAN APPLICATIONS USED	Never	Very Rarely	Rarely	Occasionally	Frequently
1. Zenka	1	2	3	4	5
2. Branch Application	1	2	3	4	5
3. Tala loan Application	1	2	3	4	5
4. Okash Loan Application	1	2	3	4	5
5. Barclays timiza loan Application	1	2	3	4	5
6. Mshwari by safaricom	1	2	3	4	5
7. Fuliza by Safaricom	1	2	3	4	5
8. KCB Mpesa Loans	1	2	3	4	5
9. Equitel Eazzy Plus Loan	1	2	3	4	5
10. Timiza from Barclays	1	2	3	4	5
11. HF Whizz	1	2	3	4	5
12. Saidia Loan Application	1	2	3	4	5

13. Zindisha	1	2	3	4	5
14. Stawika Loan Application	1	2	3	4	5
15. Haraka Loan Application	1	2	3	4	5
16. Utunzi Application	1	2	3	4	5
17. Jazika Loan Application	1	2	3	4	5
18. Shika Loan Application	1	2	3	4	5
19. Pesazone Loans	1	2	3	4	5
20. Okolea	1	2	3	4	5
21. Craft	1	2	3	4	5
22. Jumo/Kopa Cash	1	2	3	4	5
23. Kopa chapaa	1	2	3	4	5
24. Okoa Sitima	1	2	3	4	5
25. Pesa na Pesa	1	2	3	4	5
26. Pesa para	1	2	3	4	5
27. Pesa Zetu	1	2	3	4	5

1. On a scale of 1-5 indicate your main reason for using the mobile loan credit application.

REASON FOR BORROWING	Very Rarely	Rarely	Occasionally	Frequently	Very Frequently
1. Food & drinks bills	1	2	3	4	5
2. Transport	1	2	3	4	5
3. Rent	1	2	3	4	5

4. Betting	1	2	3	4	5
5. Entertainment	1	2	3	4	5
6. Airtime	1	2	3	4	5
7. School fees	1	2	3	4	5
8. Domestic shopping	1	2	3	4	5
9. Medicinal emergency	1	2	3	4	5
10. Try it out	1	2	3	4	5
11. Clear another debt	1	2	3	4	5

Please answer the following questions about yourself by checking with a tick the box in front of the appropriate information or by providing the information requested where appropriate.

1. My gender is 1. male 2. Female

2. Please specify your age range. 1. 24-29, 2. 30-39, 3. 40-50, 4. Above 50,

3. Please specify your education level. 1. University, 2. High school, 3. Primary school.

Appendix III: Clearance Letter



Kenya Methodist University

P. O Box 267 - 60200, Meru, Kenya, Tel: (+254-020) 2118423-7, 064-30301/31229 Email: info@kemu.ac.ke , Website: www.kemu.ac.ke

November 21, 2019.

TO WHOM IT MAY CONCERN

RE: PALANGA NYONGESA JOSEPHAT CIS-3-1905-3/2017

This is to confirm that the above named is a student in the Department of Computer Science, in this university, pursuing a Master of Science in Computer Information System.

As a requirement, the student is expected to undertake an independent primary research in their area of specialization.

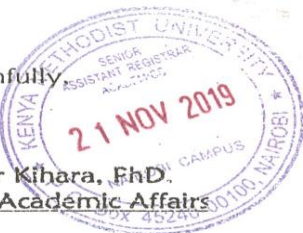
The purpose of this letter is therefore; to introduce the student to you and request you to allow him undertake the research in your organization.

The student has been advised to ensure that all data and information from the organization is treated with utmost confidentiality and only used for academic purposes unless otherwise stated.

Any assistance accorded to him will be highly appreciated.

Yours faithfully


Prof. Peter Kihara, PhD.
Registrar -Academic Affairs



Appendix IV: NACOSTI Certificate



REPUBLIC OF KENYA



**NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY & INNOVATION**

Ref No: **397001**

Date of Issue: **25/November/2019**

RESEARCH LICENSE



This is to Certify that Mr.. JOSEPHAT PALANG'A of Kenya Methodist University, has been licensed to conduct research in Kiambu, Machakos, Nairobi, Narok on the topic: DETERMINANTS OF DIGITAL CREDIT APPLICATIONS ADOPTION AND CONTINUOUS USE IN KENYA for the period ending : 25/November/2020.

License No: **NACOSTI/P/19/2983**

397001

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR
SCIENCE, TECHNOLOGY &
INNOVATION



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