DETERMINANTS OF DIGITAL INNOVATIONS ADOPTION BY FINANCIAL INSTITUTIONS IN KENYA

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN ENTREPRENEURSHIP AND INNOVATIONS MANAGEMENT, SCHOOL OF BUSINESS, UNIVERSITY OF NAIR0BI

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DECLARATION

This research project report is my original work and has not been presented to any University for academic award.

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

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DEDICATION

To my family, my wife and sons Adriyel and Jediel whose smiles and hopes inspire me to excel.

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ABBREVIATIONS AND ACRONYMS

AIBUMA	African International Business and Management
ATMs	Automated Teller Machines
CBK	Central Bank of Kenya
DT	Deposit Taking
FSD-K	Financial Sector Deepening- Kenya
GDP	Gross domestic Product
IBM	International Business Machines
ICT	Information Communication Technology
IT	Information Technology
JKUAT	Jomo Kenyatta University of Agriculture and Technology
MFB	Microfinance Bank
MFIs	Microfinance Institutions
PWC	Price Waterhouse Coopers
SACCO	Savings and Credit Cooperative
SASRA	Sacco Societies Regulatory Authority
TOE	Technology-Organization-Environment
UK	United Kingdom
UoN	University of Nairobi

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ABSTRACT

This study's objective was to examine the determinants of digital innovations adoption by financial institutions in Kenya. This study used descriptive survey research design and data was analyzed using Statistical Package for Social sciences (SPSS). The target population of this study was financial institutions in Kenya undertaking deposits, payment services and lending with specific focus on commercial banks, microfinance banks and deposit taking Savings and Credit Cooperatives (SACCOs). This study sampled 30% of the population applying stratified proportionate random sampling method from the three strata namely commercial banks, MFBs and SACCOs. Survey questionnaires were used to collect primary data while secondary data was obtained through document analysis of reports, journals and other published works. This study yielded both quantitative and qualitative data. Descriptive and inferential statistics were used to analyze quantitative data; they included percentages, mean, frequencies and standard deviation. Inferential statistics included regression and correlation analysis which was used to identify the determinants of financial innovations adoption. Results of quantitative data analysis were presented in tables and charts. Qualitative data analysis was done using content analysis where documents and open-ended responses on the six variables of this study were examined. Emerging themes were categorized to supplement quantitative results and helped in making conclusions. The results reveal that organizational resources positively contribute to adoption of digital innovations by financial institution and that technological changes negatively contribute to use of digital innovations by financial institutions in Kenya. Findings further reveal that competitive pressure and the drive for new sources of revenue growth contributed positively to adoption of digital innovations by financial institutions in Kenya. Customer behavior changes were also found to contribute positively to use of digital innovations in financial institutions. This study concludes that organizational resources especially monetary resources are important determinants of digital innovations adoption by financial institutions. Technological changes form an important category of determinants of digital innovations adoption. Competitive pressure was found to have forced financial institutions to adopt digital innovations. Customer behavior changes were found to be the most critical determinant of digital innovations adoption by financial institutions. These changes have pushed financial institutions to adopt digital innovations in order to meet customer demands and align with their preferences. This study recommends that financial institutions should invest monetary resources in digital innovations adoption. Financial institutions should seek expert advisory in their digital innovations adoption pursuit to avoid the risk of obsolete technology in form of software and hardware. Financial institutions should first assess the security of their data and information before adopting digital innovations and despite being competitors, explore ways to collaborate in gainful digital innovations. The government and other stakeholders should help and support financial services industry to establish a framework that can be followed by organizations seeking to adopt digital innovations. The government should also support digital innovations adoption by improving internet and mobile networks infrastructure, online security and curbing cybercrime. Financial institutions should also embrace market research so that they are aware of the customer preferences and how they can meet those preferences using digital innovations. Generally, the institutions should strategize for digital and align their strategies to among others, these determinants.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The role of information technology and data in business has become pronounced with radical transitions in the last few decades. Firms are operating in technology-enabled and digitally interconnected environments. Subsequently, focus is shifting to Information Technology (IT) enabled business processes and design of digitally driven business models (El Sawy & Pereira, 2013). Drivers such as technological change, consumer behavior changes, globalization, and increased appetite for higher revenues, just to mention a few are in addition, profoundly changing the competitive game (Ramon & Joan, 2009). Financial services industry has all the time relied heavily on technological investments and people due to it's highly information intensive nature. It follows that advances in IT have profoundly impacted on how financial institutions' business is organized (Rishi & Sweta, 2004). As a result, the world banking and financial system is on an accelerated digital transformation. Innovations such as those in mobile banking, online banking, agency banking and smartcards are taking place at an overwhelmingly fast pace (Muiruri & Ngari, 2014).

Kenya's financial services providers are diverse, relatively well developed and globally linked. The most significant segments in deposits, payment services and lending business comprises 42 Commercial banks, 12 Microfinance banks, 1 mortgage Company (CBK, 2015) and 164 fully licensed deposit taking SACCOs (SASRA, 2016). Market based forces coupled with advancements in internet and mobile technology have caused significant disruption in the sector leading to adoption of digital platforms by these institutions mainly to distribute products, processing and

deepening their engagement with their customers. Increased collaborations between financial institutions, telecommunications, payment networks and technology companies, such as those seen in M-shwari, KCB Mpesa, Equity bank's Equitel, and a variety of others have been seen.

Today, expectations from financial institutions are changing across all customer segments, mainly driven by need for convenience and flexibility. Customer intimacy is moving to digital. On one hand, digital innovations are enabling financial institutions to easily reach their consumers and even serving them remotely. On the other hand, it has enabled them to open new revenue streams and provide cost savings. Due to their ability to lower transaction costs, increase efficiencies and revenues, financial institutions are leveraging new technologies (Gongera *et al*., 2013). These new technologies have ushered digital innovations and disruptors who have changed the competitive game by sucking up traditional revenue pools of financial institutions. With this new changing business context, digital innovations and means of interaction will be required for financial institutions (Matt *et al*., 2011). They must understand and take advantage of these structural changes to compete differently and innovate (Ramon & Joan, 2009).

A number of theories explain innovations adoption. Schumpeter's theory of innovations perceives innovation as a critical driver of competitiveness and economic dynamics. According to Schumpeter (1939), new innovations are imitated by other entrepreneurs forcing the inventors to rethink and get new innovations hence 'equilibrium destruction' and the cycle that follows. The diffusion theory explores four factors that influence diffusion of an innovation which include the innovation

itself, communication, timing and social system where an innovation is introduced (Rogers, 1995). Technological, Organizational and Environmental framework developed by Tornatzky and Fleischer (1990) perceives technological factors, organizational and environmental factors as fundamental elements in technological innovations adoption.

1.1.1 Digital Innovations Adoption

Innovation has not only been defined as conceptualization and development of new commodities, methods and ideas but also as the successful bringing of new offerings to the market (Cakar & Erturk, 2010; Schumpeter, 1934). It involves creating new value and/or capturing value in new ways and includes developing new products, product upgrades and new production methods, processes and systems required for market adaptation, technologies and models of competition (D'Aveni, 1994: Dungherty of Hardy, 1996; Utterback, 1994)-as cited in Bultum (2014). In the financial services business, innovation is considered to be the act of creating and propagating new money related instruments, technologies, institutions and markets, which facilitate access to data, trading and transaction methods (Solans, 2003).

Digital innovations in financial ventures can be traced back to 1970, when their computerization gained momentum (Malak, 2007). Financial institutions use digital technologies to automate processes, develop new market offerings, advance regulatory compliance, transform client experience, and disrupt key value chain components (Broeders & Khana, 2015). Torsten *et al*. (2013) argued that digitization, technologies, procedures and structures behind it in institutions like banks brings a

combination of outward and inside facing benefits that include a new customer experience and an efficient, effective operating model respectively. To start with, focus has been primarily on new, technology enabled services addition to the existing offering. Prominently featuring are mobile devices (applications, e-wallet arrangements, and personal finance management tools) and online platforms (International Business Machines, 2014). Technology platforms including mobile, desktops, notebooks and wearable devices such as smart watches have been used to transform channels (Frame & White, 2009).

Adoption of digital innovations varies significantly across financial institutions. They have differing intensity and range of application of digital capabilities and therefore the digital experience. There is a big gap in digital innovations adoption in the financial services sector thus, a digital divide (Mbarika *et al.,* 2005). An analysis of financial services ecosystem identifies 'defenders' who are mainly market incumbents and try to move into the digital space but few are resourced to make it without external leverage. On the other hand, are 'attackers' are new entrants who are attempting to take away a share from the incumbents by making themselves a part of the value chain. This segment includes players in technology and mobile operators (PWC, 2013).

1.1.2 Financial Institutions in Kenya

Kenya has a well-developed financial system for a country of its income level. The major financial services players in Kenya are Banks, Microfinance Banks and Deposit Taking SACCOs (DTS). As of September 30 2015, there were 42 commercial banks,

12 microfinance banks and 1 mortgage finance company regulated by the Central Bank of Kenya (CBK, 2015). 164 DT SACCOs fully licensed and regulated by the SACCO Societies Regulatory Authority (SASRA, 2016) complete this segment. Apart the above, other financial institutional players include non-regulated credit-only microfinance institutions(MFIs), mobile money operators, a large number of non-deposit taking SACCOs, village banks, financial services associations (FSAs) and savings groups and a growing number of start-ups in financial technology looking to build a new generation of financial services (FSD-K, 2015).

Commercial Banks dominate the financial services sector in Kenya (Kamau, 2009). The significance of the sector can be demonstrated by June 2015 figures where the sector's balance sheet stood at Ksh. 3.6 trillion ($39.6 billion), total deposits at Ksh. 2.6 Trillion ($28.6billion), and gross loans of Ksh. 2.2 Trillion ($24.2 billion) during the same period. Total income reported in the sector was Ksh. 226 Billion (Oxford Business Group, 2015), a significant contribution to the GDP (Ksh. 6 Trillion). Total asset base of Deposit Taking SACCOs as at December 2014 stood at Ksh. 301 billion and deposits totaling Ksh. 206 billion (SASRA, 2016).

The financial services sector in Kenya is highly competitive and the institutions are adopting modern ways of operating and continually developing competitive products and services. Mobile banking, related financial innovations and digitization of processes, product delivery and relationship channels are being adopted. They include landmark digital applications such as those provided by the MPESA platform that allows a range of banking options through 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.

1.2 Research Problem

The concept of digital innovations is not a new phenomenon and its origin can be traced back to 1970 as computerization in financial institutions gained momentum (Malak, 2007). The concept has grown from initial basic computerization of financial institutions' functions to more advanced digital technologies like mobile devices and online platforms. These have been used in financial institutions to make their functions efficient (Broeders & Khana, 2015). In addition to efficient and effective operations, Torsten *et al*. (2013) argued that digital innovations also offer customers a new experience. Adoption of digital innovations is not uniform among financial institutions and varies significantly hence creating a digital divide (Mbarika *et al.,* 2005). This digital divide, curious heterogeneity and diversity in usage of digital innovations could be explained by determinants of adoption of innovations which is the focus of this study.

Financial innovations through the digital frontier have been prevalent in Kenya, and financial institutions at all levels are increasingly adopting digital platforms, taking lead in the region. Mobile phones and web have been found to have a noteworthy impact in conveying technology driven financial services (Ngumi, 2013). According to Ndung'u *et al.* (2016) more than 75% of the adult population is using mobile money channels in Kenya and CBK (2015) reported a 37.8% increase in the number of agency banking transactions from the previous year (2014). Digital financial

services such as Commercial Bank of Africa's Mshwari, KCB-MPESA and Equity bank's Equitel among others are in the menu of Banks, SACCOs and MFBs and reported to transact billions of cash daily in additions to loan facilities and other services. These curious trends suggest usage of digital innovations as a strategy by financial institutions, banks holding the lead.

While there is a considerable body of literature generated on financial innovations, there is limited and fragmented literature on determinants of digital innovation adoption, in the developing world. Bultum (2014) has studied the factors affecting appropriation of electronic banking systems in Ethiopia, and identifies barriers such as security risk, feeble ICT infrastructure, absence of legal and regulatory framework and absence of rivalry. Studies by Broeders and Khana (2015), Matt *et al*. (2011), Torsten *et al*. (2013), Accenture (2015), Oracle (2015), PWC (2015) and A.T. Kearney (2013) have focused on global digital trends in banking. The studies reveal that banking institutions are making strategic and business model shifts for survival and performance. They provide useful insights into digital innovations adoption. In the Kenyan context, studies by Muiruri and Ngari (2014), Ngumi (2013), Njuguna (2013) and Wazovi (2013) have focused heavily on effects of financial and technological innovations such as mobile, internet, and agency banking on the performance of commercial banks, while Mwangi (2013) has focused on deposit taking organizations. The studies support that innovations influence the performance of financial institutions. The studies also reveal that innovations are not only being adopted by the institutions but by their customers also. Kubasu (2010) and Gongera *et al*. (2013) have explored factors affecting adoption of technological innovations by commercial banks in Kenya with a bias on internet banking. They seem to agree on

the positive influence of average bank assets and negative influence of competition and rise in average age of a bank on the rate of adoption.

From previous research, no clear relationships and conclusions on determinants of digital innovations adoption in the Kenyan market context that have been found. Previous studies have mainly focused on the relationship between innovations and organizational performance. This trend has also been observed by Frame and White (2009) who noted that innovations and organizational performance have been the primary research variables in studies on digital innovations in financial services. It is evident that financial innovations adoption varies across financial institutions (Mbarika *et al.*, 2005). Assessing the trends in the financial services industry does not show pull and push factors (determinants) motivating some financial institutions to pursue digital innovations and not others. It is therefore imperative to have empirical evidence on the determinants of innovations adoption by financial institutions. This study sought to answer the question: What explains variations in adoption of digital innovations across financial institutions?

1.3 Research Objectives

The objective of this study was to examine the determinants of innovations adoption by financial institutions in Kenya.

1.4 Value of the Study

The findings of this study contribute in generating knowledge in the field of digital innovations in the financial services sector. The study assesses application of different

theories explaining digital innovations adoption. In this discussion, the study contributes to knowledge in the field and creates more understanding of the concept of digital innovations. By being able to outline and categorize determinants of digital innovations, this study confirms explanations offered by theories on digital innovations.

Strategic insights and implications have been generated for industry players, particularly decision makers and practitioners in financial institutions as they strategize and evolve their business models in rapidly changing technology driven ecosystems. Further, this study provides innovators and financial services business advisors with a greater understanding to inform more effective digital applications, business models and strategies applicable for success in their respective financial institutions. The success in individual financial institutions will eventually lead to growth in the whole sector.

This study provides insights to policy makers in Kenya. These insights will enable the government to promote and develop the country's ability to fully adopt, realize and regulate a technology driven financial services industry. Key learning points can be shared and replicated in other jurisdictions.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of related literature on determinants of digital innovations adoption. The review discusses theories and empirical studies underlying digital innovations adoption.

2.2 Theoretical Underpinning of the Study

Two theories were reviewed to inform this study. They include Schumpeter's theory of innovation and the diffusion theory of innovation. The study also reviewed the Technological, Organizational and Environmental (TOE) framework of technological innovations adoption.

2.2.1 Schumpeter's Theory of Innovation

Schumpeter (1939) in his 'equilibrium destruction' theory explains innovation as "creative destruction", doing things differently. According to the theory, innovation is an essential driver of competitiveness and economic dynamics that incessantly destroys the old order and incessantly creates new ones. It results to new opportunities for investment, growth and employment (Śledzik, 2013). The theory identifies causative factors of change; the entrepreneur (innovator), change in the circular flow and interaction of the innovator with the forces at work in the flow. The emergent process of development is described as a specific wave-like form of business cycle (Paul, 1943). Independent inventors in huge firms opened opportunities for new

profits and benefits through their innovations. What follows, the theory argued, is erosion of profit margins from the innovation as a result of investment and activity by imitators. To equilibrate the market, a new innovation or even set of the same could emerge and the business cycle begins again. The causative factor, according to Schumpeter, is innovation, but did not address the source of innovation (Śledzik, 2013).

2.2.2 Diffusion Theory of Innovation

Diffusion is the process by which an innovation is imparted through specific channels after some time among the individuals from a framework, embraced and picks up acknowledgment. New ideas are invented, diffused, and embraced or dismissed; this prompts specific results and change (Gongera *et al.*, 2013). The theory identifies four factors that associate to impact the dissemination of an innovation. They include the innovation itself, how data about the advancement is imparted, time and way of social system into which the innovation is presented (Rogers, 1995). On the innovation itself, Dillon and Morris (1996); Rogers (1983 & 2003), identified an innovation's relative advantage, compatibility (with social practices and standards among users), complexity, trialability, and observability as the influential factors. In its least difficult frame, diffusion theory argues for an investigation of how these dominant factors and others associate to facilitate or impede the propagation of a particular product or practice among individuals of a particular adopter group.

2.2.3 Technological, Organization and Environmental Framework

The Technology-Organization-Environment framework (TOE) was advanced by Tornatzky and Fleischer (1990). It recognizes three essential variables for the reception of technological innovation namely; technological, organizational and environmental factors. TOE framework was intended for studying the probability of reception of technological innovations. This structure is extensive and satisfactory with regards to organizational adoption of innovations subsequently it has been utilized as a part of numerous studies (Salwani, *et al*. & Ellis 2009; Chang *et al.,* 2007, Zhu & Kraemer 2006).

In the context of this study, the technological variable alludes to adopter's view of digital attributes. Typical attributes of technology/innovation considered in innovation selection studies depend on the presumptions in Roger's dispersion of innovation (Rogers, 2003), which incorporate relative focal points (perceived benefits), and relative impediments (perceived risks). Organizational component alludes to the organization's qualities that impact its capacity to take up and utilize digital frameworks. The environmental element alludes to the outside environment in which an organization works and its condition for supporting the improvement of digital services in financial institutions (Bultum, 2014).

2.3 Digital Innovations

The changing role of information technology in business has given rise to digital ecosystems defining new logics of firms; the way they operate and how they create value for their stakeholders through digital platforms (El Sawy & Pereira, 2013). A

key feature of digitized IT is the building of networks that connect devices, objects and people (Dorner & Edelman, 2015). Digital innovations entail the application of digital tools and digital infrastructure to address the challenge of offering customers new, enhanced or unique value proposition. This is essentially achieved by leveraging new digital technology, which entails combinations of information, computing, communication and connectivity (El Sawy, Bharadwaj, Pavlou & Venkatraman, 2013).

Digital technology is an extraordinary driver for change and it creates the opportunities for new and improved business processes, new products and services. In a study on banks, Broeders and Khana (2015) distinguished four fundamental courses in which digital advancements can be used by banks to create value. To begin with is expanding a bank's network with clients, workers and providers. Second, digital draws on enormous data and progressed analytics to broaden and refine decision making. Third, digital empowers straight through handling that is, automating and digitizing monotonous, low-value, and low-risk procedures. At long last, digitization is a channel for fostering development crosswise over products and fundamental plans of action such as business models.

Dorner and Edelman (2015) asserted that digital when seen as a way of doing things could be leveraged to appropriate value at new business bounds, in core business and building foundational capacities that bolster the whole structure. Without a force to change the financial sector internally there is likelihood that technology brands such as M-PESA in Kenya, PayPal, Google, Square and related will dominate the client encounter (IBM, 2014). Financial institutions can react by being drawn into knee-jerk

reactions or they can strategize and leverage on digital advancements to automate processes, create new offerings, raise their regulatory compliance, transform their clients' experiences, and upset key components of the value chain (Broeders & Khana, 2015).

2.4 Determinants of Digital Innovations Adoption

Adoption of innovations has been studied over the last few decades and has taken various forms. Previous writing on what drives innovation has had a tendency to be partitioned into two schools of thought (Trott, 2011). The market based view argues that economic situations provide context which encourage or compel the degree of innovation in a firm. Focus is primarily on the capacity of a firm to recognize opportunities in the commercial center (Porter, 1985). Then again, the resource based view in consideration of dynamic and unpredictable markets, contends that a firm's own assets gives a substantially more steady setting in which to create advancements. The concentration is on the firm's, its assets, abilities and aptitudes. In light of these hypothetical perspectives, this empirical review focuses on the five themes which include organizational resources, technological changes, competitive pressure, pursuance of new sources of revenue growth and customer behavior changes.

2.4.1 Organizational Resources

According to David *et al*. (2013), companies' resources and capabilities are a key factor in intrapreneurship. New business creation and innovation is hindered if sufficient resources are not available for it. Resources can be characterized as those assets that are tied semi-permanently to the firm and include monetary, physical,

human, commercial, technological, and organizational assets utilized by firms to create, make, and convey products and services to its customers (Barney, 1991). Specifically, human resources, capital resources and monetary resources form this pool. Resource-Based theory of entrepreneurship contends that access to resources is an essential indicator of chance based entrepreneurship and new venturing (Alvarez & Busenitz, 2001). It stresses that when firms have assets or resources that are significant, uncommon and less imitable, they can accomplish a sustainable competitive advantage, often in the form of competitive new innovations (Aldrich, 1999). By implication, this theory suggests that firms with strategic assets such as capital are more ready to acquire resources to adequately adopt and exploit entrepreneurial innovations.

Teece *et al*. (1992) suggested that in seeking competitive advantage, the relative predominance and imitability of organizational resources cannot be underestimated. From a normative perspective, the firm should dependably stay in a dynamic capability building mode. In new business creation indicators such as the percentage of available resources that is invested the size of the new business creation pipeline (Sathe, 2003) can be used. It is not only the bundle of resources that matter; as well as the components by which firms aggregate and disseminate new aptitudes and abilities, and the forces that obstruct the rate and direction of this process.

Attempts to measure propensity to adopt ICTs against a firm's size, resources, market structure as pioneered by Rogers (1995) have been made. Cox *et al*. (2002) concentrated on the patterns of innovation in UK-based enterprises and found that most innovation engaged firms were concerned with monetary factors such as

coordinate expenses of innovation and the costs of finance. A similar study in Kenyan-based industries by Khangati (2006) found that most firms undertaking innovation activities were worried with financial and organizational variables such as direct costs of innovation, costs of finance and enterprise's interior capacities. In a global banking study by PWC (2014), 50% of the survey respondents anticipated short-term budget boosts for digital channels. Olanrewaju (2013) in a study on adoption of digital advancements in European banks found that the banks invest less than 0.5% of their aggregate spending on digital, resulting to relatively shallow digital offerings concentrated on empowering essential client transactions.

In a study on internet banking in India, Malhotra and Singh (2009) discovered that by and large internet banks are bigger and more profitable. Gongera *et al*. (2013) in a study on selection of web-based banking found that in 2006, 96% of banks with assets above Kshs. 24 billion in Kenya had a website, contrasted with just 51% with assets under Kshs. 8 billion. The study likewise indicated that an expansion in the normal bank assets impacts on the adoption of internet banking. Omondi (2003); Hannan and McDowell's (1984) concur in their distinctive studies on the adoption of technology by retail banks, that bigger banks, operating in local banking markets demonstrate a higher likelihood of introducing ATMs than smaller banks.

2.4.2 Technological Changes

History demonstrates that the advancement of new innovation as a result of technological inventions and improvements has a major impact on any industry (Frame & White, 2009). According to Rogers (2003), technology is composed of two

parts: hardware (tool) and software (information base). The three-section direct model of innovation (invention, innovation, and diffusion) is a useful guide in understanding technology and technological change (Hall, 2004). Technology changes are affecting the core of the banking business. Cheston *et al.* (2016) argued that 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. It is to a great extent innovation, and what takes after it, that will change the banking and financial services business (Cooper, 1998). Financial institutions with the latest technological advancements are positioned to build this capability further.

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). According to Bultum (2013), technological advancements have enabled customers perform transactions without visiting the physical bank building. Mushkin (2001) (as cited in Kubasu, 2010) contended that the most essential source of adjustments in supply conditions that stimulate financial related innovation has been improvements in computer and telecommunication technology.

Advances in ICT including data processing have had significant impact on the financial services provision (Heikkinen & Korhonen, 2006); nature and organization in banks and financial services based ventures (Rishi & Sweta, 2004). These changes according to Frame and White (2009) have additionally impelled innovations that

have changed bank products and services and generation processes. Lack of suitable technology according to Oracle (2015) was cited as a barrier standing in their path to digital in 75% of banks in a study. Cheston *et al*. (2016) however, argued that strategic banks have leveraged partnerships with telecommunication companies, financial technology companies, and other firms in accessing new technology. Teece (2010) asserted that solely, technology cannot convey 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 digital analytics and predictive models. In Ethiopia, Gardachew (2010) found that as a result of moderate adoption of technological innovations, banks have not achieved capacities for efficiencies. Deorukhkar and Xia (2015) found that in India, technological advances happening outside the bank are compelling traditional banks to evolve. The role of internet in revolutionizing financial services business has been examined in studies by Zwass (2003), Turban *et al*. (2004), Singh (2004), Thornton and White (2001) and found that banks have leveraged on the technology to position competitively. Financial institutions have reviewed their strategies to take full advantage of internet and cell-phone technologies.

2.4.3 Competitive Pressure

Competitive advantages change as a result of changes in the environment. Highly turbulent environment prompts innovation, making an exceptional competitive position and advantage (Roberts & Amit, 2003). This must be kept up by unending creative development and improvement of the offering and the processes (Porter, 2004). 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). Innovation is vital for keeping up aggressive position in the market and adjusting to changes in the outside environment.

As competitive atmosphere in financial services sector intensifies, financial institutions are facing pressure of doing business and reporting positive performance (Ngumi, 2013). Repositioning incumbents, new technologies, more affluent and informed customers thus more financially sophisticated, places demand on any financial institution to remain competitive. Additionally, economic environment has changed significantly due to globalization and liberalization. Convergent disruption in form of new market entrants with innovation driven deviations from conventional model in banking is significantly developing (Torsten *et al.*, 2013). As a result, the challenge to expand and maintain market share has impacted numerous organizations to put more in improving utilization of the internet and other related technologies (Tan & Teo, 2000).

Tan and Teo (2000) in a study on factors influencing adoption of internet found that a section of banks are leveraging on internet and other related technologies in the effort to grow and capture a bigger share of the market. Competition between banks pushes them to engage in innovations as established by Yildirim and Philippatos (2007) in a study on Latin American banking sectors. A study by Muiruri and Ngari (2012) found that 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. Bultum (2010) found that lack of competition among local and foreign banks in Ethiopia was a challenge for the adoption of E-banking in the country.

Digital innovations use highly automated, scalable, software-based services with no physical-distribution expenses. This effectively erodes competitive edge of customary branch systems (Nehmzow, 1997; Seitz, 1998). Dietz *et al*. (2016) investigated digital innovations adoption in banking business model and concluded that the rise of digital innovation in financial services presents a significant threat to the traditional business models of retail banks. New market participants such as digital start-ups (fin-techs) 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.

2.4.4 Pursuance of New Sources of Revenue Growth

According to Torsten *et al*. (2013), digital banking has changed the way the way revenue is generated. About 70% of business executives expect digital trends and initiatives to create greater top-line revenues for their businesses, as well as increased profitability (Didier & George, 2015). A bank after developing some innovations and succeeding finds new openings that could provide more income if exploited further (Nofie, 2011). Deep insights are opening up new sources of revenue, such as customers paying for value added services as customer centricity becomes more important. Consequently, transformation of business models for financial institutions is opening up chances for connection and interaction with clients and growing income (Matt *et al*., 2011). A PWC's survey (2014) found positivity in clients' willingness to pay for digital offering is when they trust its convenience and value. Fee based income is a major benefit from digital innovations (Dew, 2007) and more can be acquired from transactions with third parties (Deorukhkar & Xia, 2015).

A global digital banking survey by PWC (2013) found that senior executives are driven by their desire to see increased revenue growth per customer, as well as lower costs. Revenue growth per customer was cited (32%) as the primary metric their organization uses to measure return on investment in the digital channels market. In a survey on digital initiatives and new venturing by Didier and George (2015), 7% of executives sampled affirmed that their company's digital initiatives were helping them to launch new businesses. 15% said digital was helping them to create and profit from new business models. Additionally, a study by Tata Consulting Services (2015) found that banks have identified big data and analytics as a priority to understand

customers in order to drive revenue and growth. This implies that digital channels are driving revenue growth. Ngumi (2013) in a study on effects of bank innovations on financial performance of commercial banks in Kenya uncovered that bank related innovations have huge impact on revenues and yield. Banks are making transactional commissions done on advancement channels like phones, far from customary sources like interest on advances. According to Ngumi (2013), the opportunity for banks with substantial, well-managed investment in digital could be much more significant.

2.4.5 Customer Behavior Changes

Customer experience (convenience, access and delight) is becoming the differentiator in the services industry using technology as an enabler. Customer attitudes have fundamentally changed; they are demanding much more from banking services (Tan & Teo, 2000), faster in decision making and a variety of offers is available for them. In addition, they seek much more convenience and flexibility (Birch & Young, 1997; Lagoutte, 1996), effective but and easy to use channels, products and services that could not be offered by traditional banking approaches. Customers and employees are being empowered by the ascent of online networking and collaboration channels, effectively moving control of the brand message from organizations to consumers.

Preference for digital is on the rise in all customer segments, particularly the emerging middle age and youth who according to Matt *et al*. (2011) is at the edge of setting the minimum essentials for banking relationships. The nature of the digital product or service is an essential variable in their choice making and understanding these evolving consumer preferences can lead to significant new opportunities (Accenture,

2015). Increasing the consumer's primary goal is 'buying something' easily, more conveniently, faster and cheaper. To retain their demanding and discerning customers, financial institutions have a real imperative to continually innovate and renew and to avail convenient, dependable, and expedient services (Tan & Teo, 2000).

A study by Nyangosi and Arora (2011) on internet and mobile based services contended that financial business establishments embraced diverse electronic dispersion channels to meet the requests of clients. Inclusion of IT in banking business was found vital for client loyalty. Long queues, poor customer service and client dissatisfaction with traditional brick and mortar banking (Karjaluoto, Mattila & Pento, 2002) has led to rapid adoption of electronic delivery. Digital innovations offer a potential upper hand for banks and favorable advantages lie more in fulfillment of client needs and savings on costs. In a research conducted with almost 3,000 banking customers from a scope of segments across markets, Matt *et al*. (2011) uncovered that there is a strong direct relationship between digital engagement and share of wallet for a client. Tendency for larger product holdings were found in digitally active clients. Matt *et al*. (2011) additionally found that increased share of wallet, thus higher revenue generation from the customer pool was driven by banking relationship primacy. Additionally, Bareisis and Latimore (2014) observed that in respect to the rationale of investing on digital innovations, 47% of banking executives cited the need to improve customer relations through digital engagements.

In summary, digital innovations seem to exert significant influence on the operations and growth of today's financial institution. The digital transformation promises to bring in efficiency gains, improve competitiveness and enhance customer contact

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 (Sean, 2015) cannot be underestimated. Regardless of how the outlook changes due to outside factors like technology and competitive environment, a firm's strategic and competitive context is inseparable from the innovation process (Kubasu, 2010). On the other hand, even if financial institutions' investments in new innovations seem exorbitant, they are a necessary step.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the methods and procedures that were used to accomplish the set objectives of the study. It comprises of the research design, target population of the study as well as the sampling and sample size of the study. It also outlines the data collection procedure, analysis of data and interpretation.

3.2 Research Design

This study adopted descriptive survey research design due to its ability to ensure minimization of bias and maximization of reliability of information gathered. Kothari (2004) contends that a descriptive research design is appropriate where the study needs to draw conclusions from a larger population. A descriptive study endeavors to depict or characterize a subject, often by creating a profile of a group of issues, people, events and occasions, through the gathering of data and organization of the frequencies on research factors or their connection as indicated by Cooper and Schindler (2003). In this way, this approach is suitable for this study as it depicted the situation as they exist without manipulation or control of variables which was the point of the study.

3.3 Target Population

This study's target population was financial institutions in Kenya undertaking deposits, payment services and lending. The study focused on Commercial Banks,

Microfinance Banks and Savings and Credit Cooperatives (SACCOs) in Kenya. There are 42 commercial banks and 12 Microfinance Banks licensed by the Central Bank of Kenya. There are 164 DT SACCOs fully licensed by SASRA.

3.4 Sampling and Sample Size

This study sampled 30% of the population as recommended by Kothari (2004). A sample of 10-30% of the total population is considered to be representative (Kothari, 2004). To select the sample for this study stratified proportionate random sampling method used. The study had three strata namely commercial banks, MFIs and DT SACCOs. These strata have different populations hence the need to use stratified proportionate random sampling to guarantee that every financial institution has an equivalent chance of being chosen. The following sampling matrix table 3.1 summarizes how the sampling and sample size was obtained.

Table 3.1: Sampling Matrix

Category	Population	Sample
Commercial Banks	42	14
Microfinance Banks	12	4
DT SACCOs	164	49
Total	**230**	**71**

3.5 Data Collection Procedure

This study collected both primary and secondary data. Questionnaires were used to gather primary data. Secondary data was obtained through document analysis of reports, journals and other published works. The targeted respondents were senior

managers in innovations, IT, Operations, product and business development in Kenyan financial institutions. Where possible, the data was collected from the CEO or executive directors in respective financial institutions. The survey targeted a single questionnaire per institution and was administered on the spot by the researcher after booking an appointment with a senior manager in each of the financial institutions selected for the study or addressed through email.

The questionnaire was structured in seven sections covering background information and addressing each financial institution's digital innovations in place, resources, technological aspects, competition, revenues drive and customer preferences as per the thematic areas of this study.

3.6 Data Analysis and Interpretation

This study yielded both quantitative and qualitative data. Descriptive and inferential statistics were used to analyze quantitative data. Descriptive statistics used to describe variables included percentages, mean, frequencies and standard deviation. Inferential statistics included regression and correlation analysis which were used to identify the determinants of financial innovations adoption. Results of quantitative data analysis were presented in tables and charts. Qualitative data analysis was done using content analysis where documents and open-ended responses on the six variables of this study were examined. Emerging themes were categorized to supplement quantitative results and helped in making conclusions.

CHAPTER FOUR: DATA ANALYSIS RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis and interpretation of findings. It covers descriptive and inferential data analysis results of the study.

4.2 Rate of Response

The study targeted 71 respondents from commercial banks, microfinance banks and DT SACCOs. The respondents who filled their questionnaires and they were adequate for analysis were 45. This translates to 63.4% response rate which was considered adequate for data analysis and making conclusions as recommended by Babbie (2002). The response rate is presented in table 4.1.

Table 4. 1: Rate of Response

Segment	Sample	Response	%
Commercial Banks	14	14	100
Microfinance Banks	4	3	75
DT SACCOs	49	28	57.1
Total	**71**	**45**	**63.4**

4.3 Background Information

The respondents were asked to indicate the type of financial institution they worked in. The results show that the majority of respondents (62.2%) indicated that they worked in DT SACCOs while 31.1% worked in banks. Only 6.7% of the respondents

indicated that they worked in microfinance banks.

Table 4. 2: Type of financial institution

	Frequency	Percent	Cumulative Percent
Bank	14	31.1	31.1
Microfinance bank	3	6.7	37.8
DT SACCO	28	62.2	100.0
Total	45	100.0	

The duration that the respective organizations have been in operation was sought from the respondents. The results show that the majority of respondents (75.6%) indicated that their respective organizations have been in operation for over 10 years. The results also show that 13.3% of the respondents indicated that their organization have been in operation for 3-6 years while 11.1% indicated 7-10 years.

Table 4. 3: Duration organization has been in operation

	Frequency	Percent	Cumulative Percent
3-6 years	6	13.3	13.3
7-10 years	5	11.1	24.4
Above 10 years	34	75.6	100.0
Total	45	100.0	

The position of each respondent in the organization was sought. The results show that 8.9% of the respondents were managers while 31.1% of the respondents indicated their position as other. The results also show that 15.6% of the respondents indicated their position as CEO while 4.4% indicated their position as director.

Table 4. 4: Position in the organization

	Frequency	Percent	Cumulative Percent
CEO	7	15.6	15.6
Director	2	4.4	20.0
Manager	22	48.9	68.9
Other	14	31.1	100.0
Total	45	100.0	

The researcher sought to know the duration that the respondents have worked in their respective organizations. The results show that 43.2% of the respondents had worked in their organization for 3-6 years while 22.7% indicated that they had worked for below 3 years. The results also show that 15.9% of the respondents had worked in their organizations for 7-10 years and 18.2% indicated that they had worked in their organization for over 10 years. Those that indicated their position as other were operations staff and IT officers.

Table 4. 5: Duration worked in Financial Institution

	Frequency	Percent	Cumulative Percent
Below 3 years	10	22.7	22.7
3-6 years	19	43.2	65.9
7-10 years	7	15.9	81.8
Above 10 years	8	18.2	100.0
Total	44	100.0	

4.4 Digital Innovations in Financial Institutions in Kenya

All the respondents (100%) indicated that their organizations use digital innovations. The respondents were asked to list the digital innovations that have contributed significantly to their organization. The respondents cited, mobile banking

applications, virtual banking platform such as E-Sacco, social media, mobile money services such as M-PESA, internet banking, transaction alerts through mobile phones, agency banking, paperless banking and online payment services.

The respondents were asked to use a scale of 1-5 to rate their agreement or disagreement with statements regarding digital innovations. The results show that respondents agreed with the statements that digital technology has been used to generate and gather information in financial institutions (M=4.30, SD=.509) and that digital technological changes have influenced communication and connectivity in financial organization (M=4.59, SD=.497). The results also show that the respondents agreed with the statements that digital technology creates opportunities for new and improved business processes, new products and services (M=4.68, SD=.471) and that digital technology draws on large data and advanced analytics to expand and refine decision making (M=4.12, SD=.625). The respondents also agreed with the statements that digital technology automates repetitive, low-value, and low-risk processes (M=4.27, SD=.694) and that customers in this organization are able to access financial services through networked personal devices (M=4.43, SD=.759).

Table 4. 6: Digital Innovations

	Digital technology has been used to generate and gather information in this institution		Digital technological changes have influenced communication and connectivity in this organization		Digital technology creates opportunities for new and improved business processes, new products and services		Digital technology draws on large data and advanced analytics to expand and refine decision making		Digital technology automates repetitive, low-value, and low-risk processes		Customers in this organization are able to access financial services through networked personal devices	
	F	%	F	%	F	%	F	%	F	%	F	%
Strongly disagree	0	0	0	0	0	0	0	0	0	0	0	0
Disagree	0	0	0	0	0	0	0	0	1	2.3	1	2.3
Neutral	1	2.3	0	0	0	0	6	14.0	3	6.8	4	9.1
Agree	29	65.9	18	40.9	14	31.8	26	60.5	23	52.3	14	31.8
Strongly agree	14	31.8	26	59.1	30	68.2	11	25.6	17	38.6	25	56.8
Total	44	100.0	44	100.0	44	100.0	43	100.0	44	100.0	44	100.0
N Valid		44		44		44		43		44		44
Mean		4.30		4.59		4.68		4.12		4.27		4.43
Std. Deviation		.509		.497		.471		.625		.694		.759

4.5 Results on Determinants of Digital Innovations Adoption

The results of the analysis and discussion on the determinants of digital innovations adoption are presented in this section as per the five thematic areas of this study.

4.5.1 Results on Organizational Resources

The extent to which organizational resources have influenced use of digital innovations was sought from the respondents. They were asked to use a five point likert scale of 1-5 where 1= Not at all, 2= Little extent, 3= Moderate extent, 4= Great extent, 5= Very great extent. The results show that the organization's capital resources (M=3.79, SD=.861) and human resources capacity (M=3.55, SD=.916) influence use of digital innovations to a moderate extent. The results also show that the respondents indicated that monetary resources (M=4.00, SD=.715) influence use of digital innovations to a great extent.

Table 4. 7: Organizational Resources

	Organization's capital (commercial, organizational and technological assets) resources		Monetary resources		Human resources capacity	
	F	%	F	%	F	%
Not at all	1	2.3	0	0.0	1	2.4
Little extent	2	4.7	2	4.5	3	7.1
Moderate extent	9	20.9	5	11.4	16	38.1
Great extent	24	55.8	28	63.6	16	38.1
Very great extent	7	16.3	9	20.5	6	14.3
Total	43	100.0	44	100.0	42	100.0
N Valid	43		44		42	
Mean	3.79		4.00		3.55	
Std. Deviation	.861		.715		.916	

The respondents were asked to indicate whether their respective organizations had adequate resources to adopt digital innovations. The results indicate that the majority of the respondents (79.5%) indicated yes as compared to 20.5% of the respondents who indicated no.

Table 4. 8: Organization has adequate resources to adopt digital innovations

	Frequency	Percent	Cumulative Percent
Yes	35	79.5	79.5
No	9	20.5	100.0
Total	44	100.0	

The respondents were also asked to indicate whether their respective organizations had committed sufficient resources for adoption of digital innovations. The results show that the majority of respondents (65.9%) indicated yes while 34.1% of the respondents indicated no.

The researcher sought to establish whether there was association between organizational resources for adoption of digital innovations and type of financial institutions. The results show that more DT SACCOs were likely not to have adequate resources for adoption of digital innovations than the banks and microfinance banks.

Table 4. 99: Organization resources * Type of financial institution Crosstab

		Type of financial institution			Total
		Bank	Microfinance bank	DT SACCO	
Organization have adequate resources to adopt digital innovations	Yes	14	2	19	35
	No	0	1	8	9
Total		14	3	27	44

The researcher used chi square test to establish whether the association is statistically significant. Pearson chi square test results show that the association between organizational resources for adoption of digital innovations and type of financial institutions is not statistically significant (X^2 = 5.303, d=2, p=0.071).

Table 4. 100: Organization resources * Type of financial institution Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	5.303[a]	2	.071
Likelihood Ratio	7.950	2	.019
Linear-by-Linear Association	4.611	1	.032
N of Valid Cases	44		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is .61.

The researcher sought to know whether there was association between organization commitment in resources for adoption of digital innovations and type of financial

institution. The results show that many DT SACCOs were less likely to commit organizational resources for adoption of digital innovations as compared to banks and microfinance banks.

Table 4. 11: Organization commitment in resources*Type of financial institution Crosstab

		Type of financial institution			Total
		Bank	Microfinance bank	DT SACCO	
Organization committed sufficient resources for adoption of digital innovations	Yes	12	2	15	29
	No	2	1	12	15
Total		14	3	27	44

The researcher sought to establish the statistical significance of the association between organization commitment in resources for adoption of digital innovations and type of financial institution. Pearson chi square test results show that the association between organization commitment in resources for adoption of digital innovations and type of financial institution was not statistically significant (X^2 = 3.733, d=2, p=0.155).

Table 4. 111: Organization commitment in resources*Type of financial institution Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.733[a]	2	.155
Likelihood Ratio	4.066	2	.131
Linear-by-Linear Association	3.629	1	.057
N of Valid Cases	44		

a. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.02.

Table 4. 13: Organization committed sufficient resources for adoption of digital innovations

	Frequency	Percent	Cumulative Percent
Yes	29	65.9	65.9
No	15	34.1	100.0
Total	44	100.0	

4.5.2 Results on Technological Changes

An indication was sought from the respondents on the extent a number of statements applied to their organizations in regard to technological changes and adoption of digital innovations. They were to use a five point likert scale of 1-5 where 1= Not at all, 2= Little extent, 3= Moderate extent, 4= Great extent, 5= Very great extent. The results show that respondents indicated that financial organizations have leveraged on the technology to improve their operations, products and services to a great extent (M=4.14, SD=.718). The results also show that financial organizations utilize technologies such as ICT and mobile to a great extent (M=4.38, SD=.582). The respondents also indicated that the financial organizations use technology in organizational functions (M=4.12, SD=.600) and that software changes have contributed to adoption of digital innovations in institutions (M=4.07, SD=.838) to a great extent. The study revealed that hardware changes have contributed to adoption of digital innovations in institutions (M=3.76, SD=.830) and that financial organizations use outsourced technologies and leverage on collaborations in technology (M=3.74, SD=.966) to a moderate extent. The respondents indicated that the organizations use internally generated technologies (M=2.95, SD=.857) to a little extent.

Table 4. 124: Technological Changes

	Organization has leveraged on the technology to improve its operations, products and services		Organization utilizes technologies such as ICT and mobile		Organizations uses technology in organizational functions		Hardware changes have contributed to adoption of digital innovations in this institution		Software changes have contributed to adoption of digital innovations in this institution		Organization uses internally generated technologies		Organization uses outsourced technologies and leverages on collaborations in technology	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Not at all	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	5.1	0	0.0
Little extent	0	0.0	0	0.0	0	0.0	3	7.3	2	4.8	8	20.5	6	15.4
Moderate extent	8	19.0	2	4.8	5	12.2	11	26.8	7	16.7	20	51.3	6	15.4
Great extent	20	47.6	22	52.4	26	63.4	20	48.8	19	45.2	8	20.5	19	48.7
Very great extent	14	33.3	18	42.9	10	24.4	7	17.1	14	33.3	1	2.6	8	20.5
Total	42	100.0	42	100.0	41	100.0	41	100.0	42	100.0	39	100.0	39	100.0
N Valid	42		42		41		41		42		39		39	
Mean	4.14		4.38		4.12		3.76		4.07		2.95		3.74	
Std. Deviation	.718		.582		.600		.830		.838		.857		.966	

The respondents were asked to indicate which technologies or technological advancements have significantly contributed to the adoption of digital innovations in their organization. The respondents cited mobile technology (including smart phones and android technology), ubiquitous computing, the internet, cloud computing, wireless networks, transaction/payment technologies, mobile money services, digitally compatible core banking systems, self-service technology platforms, and mobile applications (Apps).

4.5.3 Results on Competitive Pressure

Respondents were asked to indicate the extent to which a number of statements regarding competitive pressure apply to their organizations' use of digital innovations. The results show that changes in the external environment in the financial services

industry have influenced digital innovations in institutions to a great extent (M=4.24, SD=.576). The results also show that adoption of digital innovations in institutions has been geared towards maintaining a competitive position in the market (M=4.48, SD=.552) and that adoption of digital innovations in institutions has been targeted to repositioning (M=4.29, SD=.512) to a great extent. The findings reveal that organizations have imitated digital innovations from a competitor(s) to a little extent (M=2.95, SD=.1.081) while other financial institutions have imitated digital innovations originating from other institutions to moderate extent (M=3.21, SD=1.094).

Table 4. 135: Competitive Pressure

	Changes in the external environment in the financial services industry have influenced digital innovations by this institution		Adoption of digital innovations in this institution has been geared towards maintaining a competitive position in the market		This organization has imitated digital innovations from a competitor(s)		Other financial institution(s) have imitated digital innovations originating from this institution		Adoption of digital innovations in this institution has been targeted to repositioning of this institution	
	F	%	F	%	F	%	F	%	F	%
Not at all	0	0.0	0	0.0	4	9.5	4	9.5	0	0.0
Little extent	0	0.0	0	0.0	10	23.8	6	14.3	0	0.0
Moderate extent	3	7.1	1	2.4	15	35.7	12	28.6	1	2.4
Great extent	26	61.9	20	47.6	10	23.8	17	40.5	27	65.9
Very great extent	13	31.0	21	50.0	3	7.1	3	7.1	13	31.7
Total	42	100.0	42	100.0	42	100.0	42	100.0	41	100.0
N Valid	42		42		42		42		41	
Mean	4.24		4.48		2.95		3.21		4.29	
Std. Deviation	.576		.552		1.081		1.094		.512	

4.5.4 Results on New Sources of Revenue Growth Drive

The researcher sought to know the extent that a number of statements regarding

opening up of new sources of revenue growth as a result of using digital innovations applied to respondents' organizations. The results show that respondents indicated that digital innovations have contributed to opening up of new sources of revenue through value added services (M=4.07< SD=.787) to a great extent. The results also show that digital innovations have contributed to opening up of new sources of revenue through fee based income (M=3.95, SD=.740) to a moderate extent. The findings also reveal that digital innovations have created value to the organization (M=4.29, SD=.680) to a great extent. The results show that digital innovations have created convenience in institution's operations (M=4.33, SD=.621) to a great extent. The results also show that digital innovations have created convenience in revenue generation (M=4.25, SD=.543) to a great extent.

Table 4. 146: New Sources of revenue growth drive

	Digital innovations have contributed to opening up of new sources of revenue through value added services		Digital innovations have contributed to opening up of new sources of revenue through fee based income		Digital innovations have created value to the organization		Digital innovations have created convenience in institution's operations		Digital innovations have created convenience in revenue generation	
	F	%	F	%	F	%	F	%	F	%
Not at all	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Little extent	1	2.4	0	0.0	0	0.0	0	0.0	0	0.0
Moderate extent	8	19.5	12	29.3	5	12.2	3	7.7	2	5.0
Great extent	19	46.3	19	46.3	19	46.3	20	51.3	26	65.0
Very great extent	13	31.7	10	24.4	17	41.5	16	41.0	12	30.0
Total	41	100.0	41	100.0	41	100.0	39	100.0	40	100.0
N Valid	41		41		41		39		40	
Mean	4.07		3.95		4.29		4.33		4.25	
Std. Deviation	.787		.740		.680		.621		.543	

4.5.5 Results on Customer Behavior Changes

The respondents were asked to indicate their agreement or disagreement with

statements regarding customer preferences. They were asked to use a five point likert scale of 1-5 where 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly agree. The results show that respondents agreed with the statements that customer demands and preferences have led to adoption of digital channels in financial institutions (M=4.38, SD=.586) and that evolving customer preferences have led to significant new business opportunities for financial institutions (M=4.35, SD=.622). The results also show that respondents agreed with the statements that digital innovations have acted as an enabler of customer convenience (M=4.43, SD=.636) and that digital innovations have offered customers more flexibility and access to financial services from financial institutions (M=4.55, SD=.552). The results show that respondents agreed with the statements that digital innovations in financial institutions have been aimed at customer delight (M=4.33, SD=.616) and that digital innovations in financial institutions have helped to improve customer relations (M=4.28, SD=.554). The results also show that respondents were neutral on the statements that social media and collaboration tools have been used by customers in financial institutions (M=3.79, SD=.951) and that some customer segments have influenced digital innovations adoption in financial institutions (M=3.77, SD=.810).

Table 4. 157: Customer Behavior Changes

	Customer demands and preferences have led to adoption of digital channels in this institution		Evolving customer preferences have led to significant new business opportunities for this institution		Digital innovations have acted as an enabler of customer convenience		Digital innovations have offered customers more flexibility and access to financial services from this institution		Digital innovations in this institution have been aimed at customer delight		Digital innovations in this institution have helped to improve customer relations		Social media and collaboration tools have been used by customers in this institution		Some customer segments have influenced digital innovations adoption in this institution	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Strongly disagree	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Disagree	0	0.0	0	0.0	1	2.2	0	0.0	0	0.0	0	0.0	4	10.3	2	5.1
Neutral	2	5.0	3	7.5	0	0.0	1	2.5	3	7.5	2	5.0	10	25.6	12	30.8
Agree	21	52.5	20	50.0	20	50.0	16	40.0	21	52.5	25	62.5	15	38.5	18	46.2
Strongly agree	17	42.5	17	42.5	19	47.5	23	57.5	16	40.0	13	32.5	10	25.6	7	17.9
Total	40	100.0	40	100.0	40	100.0	40	100.0	40	100.0	40	100.0	39	100.0	39	100.0
Valid		40		40		40		40		40		40		39		39
Mean		4.38		4.35		4.43		4.55		4.33		4.28		3.79		3.77
Std. Deviation		.586		.622		.636		.552		.616		.554		.951		.810

4.6 Regression Analysis

To establish the determinants of digital innovations in financial institutions in Kenya, the researcher used multiple linear regression. The results presented in the model summary show that customer behavior changes, organizational resources, competitive pressure, technological changes, and new revenue sources explain 22.3% of digital innovations use by financial institutions (Adjusted R Square=.223). This has shown that apart from these predictors, there are other determinants of digital innovations adoption by financial institutions in Kenya.

Table 4. 168: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.597[a]	.357	.223	2.11522

a. Predictors: (Constant), Customer Behavior Changes, Organizational Resources, Competitive Pressure, Technological Changes, New Revenue Sources

The Analysis of variance (ANOVA) was used to assess whether the model used in this data analysis was fit for the data. This was determined by the statistical significance of F statistics. The results show that F statistics was statistically significant (F=2.664, p=0.047). This implies that the results from the regression analysis reflect the reality and could not have occurred by chance.

Table 4. 179: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	59.587	5	11.917	2.664	.047[b]
Residual	107.380	24	4.474		
Total	166.967	29			

a. Dependent Variable: Digital Innovations
b. Predictors: (Constant), Customer Behavior Changes, Organizational Resources, Competitive Pressure, Technological Changes, New Sources of Revenue Growth

The individual determinants' contribution to use of digital innovations by financial institutions is shown in the coefficients table. The results indicate that organizational resources positively contribute to use of digital innovations by financial institutions. However, this relationship was not statistically significant (β=0.248, p=0.355). The results show that technological changes negatively contribute to use of digital innovations by financial institutions in Kenya. However, this contribution was not statistically significant (β=-.113, p=0.587). The findings reveal that competitive pressure positively contributes to use of digital innovations by financial institutions. This contribution is however not statistically significant (β=0.292, p=0.275). The

results show that new revenue sources contributed positively to use of digital innovations by financial institutions in Kenya. This contribution was also not statistically significant (β=0.286, p=0.316). Customer behavior changes were also found to contribute positively to use of digital innovations in financial institutions. This contribution was not statistically significant (β=0.182, p=0.289).

Table 4.20: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.816	5.163		1.707	.101
	Organizational Resources	.248	.263	.161	.942	.355
	Technological Changes	-.113	.205	-.146	-.551	.587
	Competitive Pressure	.292	.262	.236	1.117	.275
	New Revenue Sources	.286	.279	.272	1.023	.316
	Customer Behavior Changes	.182	.168	.279	1.084	.289

a. Dependent Variable: Digital Innovations adoption

4.7 Correlation Analysis

Correlation analysis was carried out to show the relationship between the determinants and selection of digital innovations in financial institutions. The results show that organizational resources are positively correlated to use of digital innovations in financial institutions (r=0.211). However, this correlation is weak and not statistically significant (p=0.264) at 95% confidence level. The results show that there was a moderate correlation between technological changes and use of digital innovations by financial institutions (r=0.398). This correlation was statistically significant at 95% confidence level (p=0.029). The results also show that there was a

moderate correlation between competitive pressure (r=0.449), new revenue sources (r=0.477) and customer behavior changes (r=0.521) and use of digital innovations. Correlation between competitive pressure and digital innovations was statistically significant at 95% confidence level while that of new revenue sources and customer behavior changes were significant at 99% confidence level. A customer behavior change emerges as the most critical determinant followed by pursuance of new revenue sources, competitive pressure and technological changes in that order.

Table 4. 218: Correlation Analysis Results

		Digital Innovations	Organizational Resources	Technological Changes	Competitive Pressure	New Revenue Sources	Customer Behavior Changes
Digital Innovations	Pearson Correlation	1	.211	.398*	.449*	.477**	.521**
	Sig. (2-tailed)		.264	.029	.013	.008	.003
Organizational Resources	Pearson Correlation	.211	1	.252	.168	.100	.070
	Sig. (2-tailed)	.264		.179	.374	.601	.715
Technological Changes	Pearson Correlation	.398*	.252	1	.560**	.710**	.640**
	Sig. (2-tailed)	.029	.179		.001	.000	.000
Competitive Pressure	Pearson Correlation	.449*	.168	.560**	1	.406*	.562**
	Sig. (2-tailed)	.013	.374	.001		.026	.001
New Revenue Sources	Pearson Correlation	.477**	.100	.710**	.406*	1	.704**
	Sig. (2-tailed)	.008	.601	.000	.026		.000
Customer Behavior Changes	Pearson Correlation	.521**	.070	.640**	.562**	.704**	1
	Sig. (2-tailed)	.003	.715	.000	.001	.000	

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

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

c. List wise N=30

4.8 Discussion of Findings

The study reveals that all (100%) of the financial institutions have had digital innovations experience and have adopted digital solutions in varying aspects.

Dominant areas of innovations are seen through mobile based banking (including transaction alerts), internet banking, virtual banking, agency banking, online payments and social media (including digital marketing). According to Broeders and Khana (2015) financial institutions adopt innovations in digital technology for customer centricity, decision making, efficiencies in processes, and delivery of products and services. The analysis realized the innovations have been largely used to generate and gather data in the various institutions, influenced communication and connectivity (through networked personal devices) and have created opportunities for the institutions. This implies that the financial institutions appreciate the value of digital technology in today's business.

On organizational resources, the study established that organizational assets influence adoption of digital innovation. Majority of the respondents indicated that organizational resources have influenced to a very great extent the use of digital innovations. This concurs with Alvarez and Busenitz, (2001) findings that access to resources is essential for innovations in an enterprise. This implies that financial institutions with ready access to resources are more likely to take up innovations in digital technology. Majority of the respondents (79.5%) agreed that their institutions had sufficient resources to facilitate adoption of digital technologies but some had not fully committed their resources towards developing digital technologies. Although test results showed that the association between organizational resources for adoption of digital innovations and type of financial institutions is not statistically significant, DT SACCOs were found less likely to commit organizational resources for adoption of digital innovations as compared to banks and microfinance banks. This implies that

across the industry, some factors determine allocation of resources and investment in digital innovations.

The study reveals that technological changes determine the adoption of financial innovation. The results show that technological changes negatively contribute to use of digital innovations by financial institutions in Kenya. However, this contribution was not statistically significant. This study concurs with Thornton and White (2001) who contend that organizations have leveraged on technologies such as ICT and mobile in their operations and rely moderately on outsourcing and collaborations in technology and to a lesser extent on internally generated technologies. This implies that technological changes outside the financial services institutions are significantly affecting adoption of digital innovations in financial institution, a concurrence with Cheston *et al*. (2016), Deorukhkar and Xia (2015). Strategic financial institutions are leveraging on partnerships to access external technology. The analysis also reveals that most impactful technological advancements are in the software segment as compared to the hardware segment.

The study also found that the competitive environment has influence on the financial institutions' adoption of innovative digital solutions. This study supports findings by Yildirim and Philippatos (2007) that competition between banks pushes them to engage in innovations. The institutions are seeking competitive positions and larger market share, in line with findings in a study by Tan & Teo (2000). The study further revealed that financial institutions aim to reposition in the market and that they are imitating innovations from each other to a moderate extent. Convergent competition factors as observed by Torsten *et al.* (2013) are also in play.

In regard to the push to pursue new sources of revenue growth, this study revealed that digital innovations have to a great extent contributed to opening up of new sources of revenue through value added services and moderately through fee based income as observed in Table 4.16. This is in line Nofie (2011) and Dew (2007) assertions that banks after developing some innovations and succeeding finds new openings that could provide more income if exploited further and that fee based income is a major benefit from digital innovations. Additionally, the study supports Ngumi (2013) findings that financial institutions are seeking new revenue streams as a result of customary sources like interest on advances being supped up by new players in the industry. Digital innovations were also found to have greatly created convenience in revenue generation (M=4.25, SD=.543).

From the study, customer behavior changes element ranked the most critical determinant. As observed from Table 4.13 and 4.21, it was established that changing customer demands and preferences have to a great extent led to adoption of digital channels in financial institutions At the same time, respondents were neutral on whether particular customer segments had more influence than others (M=3.77, SD=.810). According to Tan & Teo (2000), customer attitudes have fundamentally changed in respect to their demand from financial services providers. Additionally, the study revealed that digital innovations had improved connectivity and customer convenience. This is in line with Bareisis and Latimore (2014) findings that most banking executives cite the need to improve customer relations and align to their changing preferences through digital engagements as their rationale for digital investments.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study findings, conclusions and recommendations. It provides the answer to the research question of the study; what explains variations in adoption of digital innovations across financial institutions?

5.2 Summary of the Study Findings

The results revealed that digital innovations have been used to generate and gather information in financial institutions and that digital technology changes have influenced communication and connectivity in financial organizations. The results also show that digital technology creates opportunities for new and improved business processes, new products and services and draws on big data and advanced analytics to extend and refine decision making. Digital technology automates repetitive, low-value, and low-risk processes and customers in financial organizations are able to access financial services through networked personal devices. The results show that the organization's capital resources and human resources capacity influence use of digital innovations to a moderate extent while monetary resources was found to influence use of digital innovations to a great extent.

Results from the study reveal that financial organizations have leveraged on technology to improve their operations, products and services to a great extent and also utilized technologies such as ICT and mobile to a great extent. Financial

organizations use technology in organizational functions and software changes have contributed to adoption of digital innovations in financial institutions to a great extent. The study revealed that hardware changes have contributed to adoption of digital innovations in financial institutions and they use outsourced technologies and leverage on collaborations in technology to a moderate extent.

The results from the study shows that changes in the external environment in the financial services industry have influenced digital innovations in financial institutions to a great extent. The results also show that adoption of digital innovations in financial institutions has been geared towards maintaining a competitive position in the market and also targeted to repositioning to a great extent.

In regards to opening up of new sources of revenue through value added services, the results show that digital innovations have contributed to a great extent while their opening up of new sources of revenue through fee based income was found to be to a moderate extent. The findings also reveal that digital innovations have created value to the financial organization, created convenience in financial institutions' operations and created convenience in revenue generation to a great extent.

The results show that customer demands and preferences have led to adoption of digital channels in financial institutions and that evolving customer preferences have led to significant new business opportunities for financial institutions to a great extent. The results also show that digital innovations have acted as an enabler of customer convenience, offered customers more flexibility and access to financial services from financial institutions and have helped to improve customer relations to a great extent.

5.3 Conclusions

From the findings this study concludes that all the determinants of adoption were important and were key considerations in adoption of digital technologies for the institutions under investigation. 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.

This study concludes that competitive pressure has forced financial institutions to adopt digital innovations. When convergent competition works more efficiently and effectively using technology, financial institutions have no otherwise but to adopt digital innovations in order to be competitive too or establish partnerships. Some have gone ahead to adopt digital innovations with a view of repositioning themselves in the market. This study also concludes that pursuance of new sources of revenue growth is a valid determinant of adoption of digital innovations. Financial institutions are pursuing added revenues sources from value added services, fees and new income from digital products. The study also revealed that customer behavior changes are most critical determinants of digital innovations adoption by financial institutions

(Table 4.21). These changes have pushed financial institutions to adopt digital innovations in order to meet customer demands and align with their preferences for convenience, choice and control.

5.4 Recommendations

This study recommends that financial institutions should make allocations and invest monetary resources towards digital innovations adoption. The study recommends that financial institutions should continually seek expert advisory, research on disruptive financial technology innovations and continually assess their technologies to avoid the risks of obsolete software and hardware. Security of data and information before adopting digital innovations should be a consideration. This study recommends that despite being competitors, financial institutions should look for ways of collaboration or shared economies in digital innovations adoption for systemic advancements of the entire financial services industry.

Since digital promises efficiency and convenience in collection of revenues, it is also recommended that financial players should seek to digitally automate their services, develop and roll out digital-based products and services to increase their revenue sources and income. To be abreast with the changing customer preferences, this study recommends that financial institutions should embrace market research and intelligence so that they can meet those preferences using digital innovations. Those that have already adopted digital innovations should constantly keep themselves updated to ensure they do not fall behind their customers in technological advancements.

In cognizance of the critical role that digital innovations are playing in the financial sector, the government should help financial institutions in Kenya to adopt digital innovations. This will not only improve the financial institutions' operational performance but also lead to growth in the financial services industry- for economic growth in line Kenya's vision 2030 and financial inclusion objective. The government and other stakeholders should support financial services industry to establish a framework that can be followed by organizations seeking to adopt digital innovations. The government should also support digital innovations adoption by improving internet and mobile phone infrastructure and environment, online security and curb cybercrime. Finally, the study recommends that in order for the financial institutions to be competitive in the digital space they must take cognizance of these determinants and align their strategies to these determinants.

5.5 Limitations 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 financial institutions. This could have limited broadness of data since the respondents in the financial institutions may not have comprehensive information on the determinants and in turn, a limitation in generalization the findings in other industries. This limitation is mitigated by the fact that financial institutions have unlimited interaction and collaboration with a myriad of industries, thus familiarity.

Another limitation was in data collection methods applied. The researcher applied the questionnaire as the only data collection instrument. Another data collection method such as interview would have complemented the questionnaire. Additionally,

although majority of financial institutions' head offices are in Nairobi, the SACCO segment has home offices distributed all over the country affecting reach. This limitation however, was managed by making the questionnaire as comprehensive as possible (with open questions for probe), an online version availed and email channel used to cover institutions whose locations were far from the researcher.

This research targeted senior executives in the financial institutions. Due to work commitments some of these executives opted to delegate responses to their juniors. In this case the researcher consulted with the executives to guide on the most suitable alternatives. The senior managers were also available for consultation on any of the questions the alternate needed their input.

5.6 Suggestions for Further Research

This study focused on determinants of digital innovations adoption in financial institutions. Further studies can be conducted in order to get a broader view that would assist in generalization of key determinants of adoption of digital innovations across industries. This is because structure, systems, culture, processes, leadership, capabilities, resources and objectives vary across industries. The study's analysis has further shown that there are other determinants of digital innovations adoption that were not covered by this study. Further studies are recommended to make this list more comprehensive. Additionally, further comprehensive studies can be undertaken to critically assess the types and intensity of use of innovations in digital technology and establish if there are distinct determinants and variations in adoption of innovations particular to the Banks, MF Banks or DT SACCOs covered in this study.

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APPENDICES

Appendix I: Questionnaire

Section A: Background Information *(Please cross out any of the numbers in brackets)*

1. Kindly indicate the type of financial institution.
   Bank [1]
   Microfinance Bank [2]
   DT SACCO [3]
2. For how long has this organization been in operation?
   Below 3 years [1]
   3-6 years [2]
   7-10 years [3]
   Above 10 years [4]
3. What is your position in this organization?
   CEO [1]
   Director [2]
   Manager [3]
   Other (specify) [4]
4. For how long have you worked for this financial institution?
   Below 3 years [1]
   3-6 years [2]
   7-10 years [3]
   Above 10 years [4]

Section B: Digital Innovations

5. Has this institution used digital innovations?
   Yes [1] No [2]
6. Which digital innovations have contributed significantly to your organization?
   ……
   ……
   ……

7. In a scale of 1-5 where 1 is strongly disagree and 5 is strongly agree, rate your agreement or disagreement with the following statements in regard to digital innovations.

	Strongly disagree [1]	Disagree [2]	Neutral [3]	Agree [4]	Strongly agree [5]
Digital technology has been used to generate and gather information in this institution					
Digital technological changes have influenced communication and connectivity in this organization					
Digital technology creates opportunities for new and improved business processes, new products and services					
Digital technology draws on large data and advanced analytics to expand and refine decision making					
Digital technology automates repetitive, low-value, and low-risk processes					
Customers in this organization are able to access financial services through networked personal devices					

Section C: Organizational Resources

8. To what extent have the following influenced use of digital innovations in this organization?

	Not at all [1]	Little extent [2]	Moderate extent[3]	Great extent [4]	Very great extent [5]
The organization's capital(commercial, organizational and technological assets) resources					

Monetary resources					
Human resources capacity					
Other (specify)					

Section D: Technological Changes

9. To what extent do the following statements apply to technological changes and adoption of digital innovations in this institution?

	Not at all [1]	Little extent [2]	Moderate extent [3]	Great extent [4]	Very great extent [5]
The organization has leveraged on the technology to improve its operations, products and services					
The organization utilizes technologies such as ICT and mobile					
The organizations uses technology in organizational functions					
Hardware changes have contributed to adoption of digital innovations in this institution					
Software changes have contributed to adoption of digital innovations in this institution					
The organization uses internally generated technologies					
The organization uses outsourced technologies and leverages on collaborations in technology					
Other (specify)					

10. Which technological advancements have significantly contributed to the adoption of digital innovations in your organization?

    ……
    ……
    ……

Section E: Competitive Pressure

11. To what extent do the following statements regarding competitive pressure apply in use of digital innovations in this institution?

	Not at all [1]	Little extent [2]	Moderate extent[3]	Great extent [4]	Very great extent [5]
Changes in the external environment in the financial services industry have influenced digital innovations by this institution					
Adoption of digital innovations in this institution has been geared towards maintaining a competitive position in the market					
Adoption of digital innovations in this institution has been targeted to repositioning of this institution					
Other (specify)					

Section F: New Revenue Sources

12. To what extent do the following statements regarding to opening up of new sources of revenue apply to this organization?

	Not at all [1]	Little extent [2]	Moderate extent [3]	Great extent [4]	Very great extent [5]
Digital innovations have opened up of new sources of revenue through value					

added services					
Digital innovations have opened up of new sources of revenue through fee based income					
Digital innovations have created value to the organization					
Digital innovations have created convenience in institution's operations					
Digital innovations have created convenience in revenue generation					
Other (specify)					

Section G: Customer Behavior Changes

13. In a scale of 1-5 where 1 is strongly disagree and 5 is strongly agree, rate your agreement or disagreement with the following statements in regard to customer experience.

	Strongly disagree [1]	Disagree [2]	Neutral [3]	Agree[4]	Strongly agree [5]
Customer demands and preferences have prompted adoption of digital channels in this institution					
Evolving customer preferences have led to significant new business opportunities for this institution					
Digital innovations have acted as an enabler of customer convenience					
Digital innovations have offered					

customers more access to financial services from this institution					
Digital innovations in this institution have led to customer delight					
Digital innovations in this institution have responded to customers' demands s					
Social media and collaboration tools have been used by customers in this institution					

Thank you for your responses

Appendix II: List of Banks in Kenya

1. African Banking Corporation Ltd
2. Bank of Africa Ltd
3. Bank of Baroda Ltd
4. Bank of India Ltd
5. Barclays Bank of Kenya Ltd
6. CfC Stanbic Bank Ltd
7. Chase Bank Ltd
8. Citibank N.A.
9. Commercial Bank of Africa Ltd
10. Consolidated Bank of Kenya Ltd
11. Co-operative Bank of Kenya Ltd
12. Credit Bank Ltd
13. Development Bank of Kenya Ltd
14. Diamond Trust Bank Ltd
15. Ecobank Ltd
16. Equatorial Bank Ltd
17. Equity Bank Ltd
18. Family Bank Ltd
19. Fidelity Commercial Bank Ltd
20. First Community Bank Ltd
21. Giro Commercial Bank Ltd
22. Guaranty Trust Bank Ltd
23. Guardian Bank Ltd
24. Gulf African Bank Ltd
25. Habib Bank A.G. Zurich
26. Habib Bank Ltd
27. Housing Finance Co. of Kenya Ltd
28. I & M Bank Ltd
29. Imperial Bank Ltd
30. Jamii Bora Bank Ltd
31. Kenya Commercial Bank Ltd
32. K-Rep Bank Ltd
33. Middle East Bank Ltd
34. National Bank of Kenya Ltd
35. NIC Bank Ltd
36. Oriental Commercial Bank Ltd
37. Paramount Universal Bank Ltd
38. Prime Bank Ltd Medium
39. Standard Chartered Bank Ltd
40. Trans-National Bank Ltd
41. UBA Kenya Bank Ltd
42. Victoria Commercial Bank Ltd

Source: Central Bank of Kenya

Appendix III: List of Microfinance banks in Kenya

1. Choice Microfinance Bank Ltd
2. Faulu Microfinacne Bank Ltd
3. Kenya Women microfinance Bank Ltd
4. SMEP Microfinance Bank Ltd
5. Remu Microfinance Bank Ltd
6. Rafiki Microfinance Bank Ltd
7. Uwezo Microfinance Bank Ltd
8. Century Microfinance Bank Ltd
9. Sumac Microfinance Bank Ltd
10. U&I Microfinance Bank Ltd
11. Daraja Microfinance Bank Ltd
12. Caritas Microfinance Bank Ltd

Source: Central Bank of Kenya

Appendix IV: List of Licensed Deposit Taking SACCOS

1. 2nk SACCO Ltd
2. Afya SACCO Ltd
3. Agro-Chem SACCO Ltd
4. All Churches SACCO Ltd
5. Ardhi SACCO Ltd
6. Asili SACCO Ltd
7. Bandari SACCO Ltd
8. Baraka SACCO Ltd
9. Baraton University SACCO Ltd
10. Biashara SACCO Ltd
11. Bingwa SACCO Ltd
12. Boresha SACCO Ltd
13. Capital SACCO Ltd
14. Centenary SACCO Ltd
15. Chai SACCO Ltd
16. Chuna SACCO Ltd
17. Cosmopolitan SACCO Ltd
18. County SACCO Ltd
19. Daima SACCO Ltd
20. Dhabiti SACCO Ltd
21. Dimkes SACCO Ltd
22. Dumisha SACCO Ltd
23. Egerton SACCO Ltd
24. Elgon Teachers SACCO Ltd
25. Elimu SACCO Ltd
26. Enea SACCO Ltd
27. Faridi SACCO Ltd
28. Fariji SACCO Ltd
29. Fortune SACCO Ltd
30. Fundilima SACCO Ltd
31. Gastameco SACCO Ltd
32. Githunguri Dairy & Community SACCO Ltd
33. Goodway SACCO Ltd
34. Gusii Mwalimu SACCO Ltd
35. Harambee SACCO Ltd
36. Hazina SACCO Ltd
37. Ig Sacco Society Ltd
38. Ilkisonko SACCO Ltd
39. Imarika SACCO Ltd
40. Imarisha SACCO Ltd
41. Imenti SACCO Ltd
42. Jacaranda SACCO Ltd
43. Jamii SACCO Ltd
44. Jitegemee SACCO Ltd
45. Jumuika SACCO Ltd

46. Kaimosi SACCO Ltd
47. Kathera Rural SACCO Ltd
48. Kenpipe SACCO Ltd
49. Kenversity SACCO Ltd
50. Kenya Achievas SACCO Ltd
51. Kenya Bankers SACCO Ltd
52. Kenya Canners SACCO Ltd
53. Kenya Highlands SACCO Ltd
54. Kenya Midland SACCO Ltd
55. Kenya Police SACCO Ltd
56. Joinas SACCO Ltd
57. Kimbilio Daima SACCO Ltd
58. Kingdom SACCO Ltd
59. Kipsigis Edis SACCO Ltd
60. Kite SACCO Ltd
61. Kitui Teachers SACCO Ltd
62. Kmfri SACCO Ltd
63. Kolenge Tea SACCO Ltd
64. Konoin SACCO Ltd
65. Koru SACCO Ltd
66. Kwale Teachers SACCO Ltd
67. Kwetu SACCO Ltd
68. K-Unity SACCO Ltd
69. Lamu Teachers SACCO Ltd
70. Lainisha SACCO Ltd
71. Lengo SACCO Ltd
72. Mafanikio SACCO Ltd
73. Magadi SACCO Ltd
74. Magereza SACCO Ltd
75. Maisha Bora SACCO Ltd
76. Marsabit Teachers SACCO Ltd
77. Mentor SACCO Ltd
78. Metropolitan National SACCO Ltd
79. Miliki SACCO Ltd
80. Mmh SACCO Ltd
81. Mombasa Port SACCO Ltd
82. Mudete Tea Growers SACCO Ltd
83. Ollin SACCO Ltd
84. Murata SACCO Ltd
85. Mwalimu National SACCO Ltd
86. Mwietheri SACCO Ltd
87. Mwingi Mwalimu SACCO Ltd
88. Muki SACCO Ltd
89. Mwito SACCO Ltd
90. Nacico SACCO Ltd
91. Nafaka SACCO Ltd
92. Nandi Farmers SACCO Ltd
93. Nanyuki Equator SACCO Ltd

94. Narok Teachers SACCO Ltd
95. Nassefu SACCO Ltd
96. Nation SACCO Ltd
97. Nawiri SACCO Ltd
98. Ndege Chai SACCO Ltd
99. Ndosha SACCO Ltd
100. Ng'arisha SACCO Ltd
101. Noble SACCO Ltd
102. Nrs SACCO Ltd
103. Nufaika SACCO Ltd
104. Nyahururu Umoja SACCO Ltd
105. Nyala Vision SACCO Ltd
106. Nyambene Arimi SACCO Ltd
107. Nyati SACCO Ltd
108. New Forties SACCO Ltd
109. Orient SACCO Ltd
110. Patnas SACCO Ltd
111. Prime Time Sacco
112. Puan SACCO Ltd
113. Qwetu SACCO Ltd
114. Rachuonyo Teachers SACCO Ltd
115. Safaricom SACCO Ltd
116. Sheria SACCO Ltd
117. Shirika SACCO Ltd
118. Simba Chai SACCO Ltd
119. Siraji SACCO Ltd
120. Skyline SACCO Ltd
121. Smart Champions SACCO Ltd
122. Smart Life SACCO Ltd
123. Solution SACCO Ltd
124. Sotico SACCO Ltd
125. Southern Star SACCO Ltd
126. Shoppers SACCO Ltd
127. Stake Kenya SACCO Ltd
128. Stima SACCO Ltd
129. Sukari SACCO Ltd
130. Suba Teachers SACCO Ltd
131. Supa SACCO Ltd
132. Tai SACCO Ltd
133. Taifa SACCO Ltd
134. Taraji SACCO Ltd
135. Tembo SACCO Ltd
136. Tenhos SACCO Ltd
137. Thamani SACCO Ltd
138. Transcounties SACCO Ltd
139. Trans Nation SACCO Ltd
140. Times U SACCO Ltd
141. Tower SACCO Ltd

142. Trans- Elite County SACCO Ltd
143. Ufanisi SACCO Ltd
144. Uchongaji SACCO Ltd
145. Ukristo na UfanisiWa Anglicana SACCO Ltd
146. Ukulima Saco Society Ltd
147. Unaitas SACCO Ltd
148. Uni-County SACCO Ltd
149. United Nations SACCO Ltd
150. Unison SACCO Ltd
151. Universal Traders SACCO Ltd
152. Vihiga County Farmers SACCO Ltd
153. Vision Point SACCO Ltd
154. Vision Africa SACCO Ltd
155. Wakenya Pamoja SACCO Ltd
156. Wakulima Commercial SACCO Ltd
157. Wanaanga SACCO Ltd
158. Wananchi SACCO Ltd
159. Wanandege Sacco Society Ltd
160. Washa SACCO Ltd
161. Waumini SACCO Ltd
162. Wevarsity SACCO Ltd
163. Winas SACCO Ltd
164. Yetu SACCO Ltd

Source: SASRA