MOBILE BANKING TECHNOLOGY, INNOVATION STRATEGY AND COMPETITIVE ADVANTAGE OF COMMERCIAL BANKS IN KENYA

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

DECEMBER, 2017

DECLARATION

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

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D61/83712/2015

This research project has been submitted for examinations with my approval as the university supervisor.

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ACKNOWLEDGEMENT

The success of this research project is as a result of a substantial contribution from a large number of persons.

My sincere gratitude to the Almighty God for favoring me to school.

Secondly, I sincerely thank my wife, Jeptepkeny and the entire family for their support and patience during my studies.

I would like to thank my university supervisor Prof. Zachary B. Awino for his close guidance throughout the project.

Final thanks goes to the respondents who willingly provided the information required for the research, my research assistant and other classmates with whom we shared and exchanged ideas for the successful completion of this project.

May the Almighty God reward you accordingly

DEDICATION

I dedicate this work to my family and most of all to my parents for believing in me and their relentless support and inspirational encouragement. Your prayers brought me this far. Amen.

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ABBREVIATION AND ACRONYMS

ATM	Automated Teller Machine
CBK	Central Bank of Kenya
DOI	Diffusion of Innovation
GDP	Gross Domestic Product
ICT	Information Technology and communication
IT	Information Technology
SWOT	Strength Weakness Opportunity Threats
UTAUT	Unified Theory of Acceptance and Use of Technology

ABSTRACT

Organizations strive to remain competitive by adopting mobile banking technology as an innovation strategy. The study, therefore, sought to determine the impact of adoption of mobile banking technology affects competitiveness of commercial banks in Kenya. This study adopted a descriptive research design, which was a census study. Population of study comprised of all the (43) commercial banks (43) in Kenya. Primary data was collected through an interviewer administered questionnaires which contain both closed and open ended questions. Data was analyzed mainly through the use of descriptive statistical such and inferential statistics. On extent of investment in technology, the study findings revealed that respondents agree to a very great extent that training cost to improve IT skills with a mean 4.79 and standard deviation 0.891, ATMs with a mean of 4.54 and standard deviation of 0.6, Money transfer systems with a mean of 4.62 and standard deviation of 0.59, mobile banking with a mean of 4.56 and standard deviation of 0.68 and Internet banking direct access to your account with a mean of 4.49 and standard deviation of 0.823 were some of the major ways that there banks invested in technology. From findings on extent of application of technology the respondents acknowledged that to a very great extent that account opening process with a mean of 4.65 and standard deviation of 0.622, truncation and cheque imaging transmission with a mean of 4.53 and standard deviation of 0.64, call center with a mean of 4.53 and standard deviation of 0.599 and settlement of payment on a gross basis in real time with a mean of 4.45 and 0.677 were some of the automated areas in their banks. The study concluded that the application of technology in the account opening process, truncation and cheque imaging transmission, call center, settlement of payment on a gross basis in real time, loan approval process, credit card services, and sales force automation has resulted in competitive advantage for the banks. These advantages have been seen in the high quality customer service; personalized services; 24/7/365 availability of your resources; quickened transaction processing; visibility of the bank through search engine marketing; increased bank turnover and profitability; reduced marketing and advertising costs; and expanded geographical reach.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Technology can be said to be the application of scientific knowledge for practical purposes in industry, which comes by as a result of advancement in computer technology. It involves assembling of machines and devices developed from scientific knowledge (Oxford Living Dictionary). Mobile banking can be said to be the provision of a service by financial institution which allows customers to conduct financial transactions by use of a mobile phone with not necessarily visiting a bank. Mutua (2010) noted that financial innovations in Kenya's banking sector have a positive impact on the banks financial performance. Technology and innovation in banks has significant effects on bank's profitability and in turn can enable the institutions to gain the competitive advantage.

Several theories have given light towards technology. Information Technology Acceptance Theory whose main aim is to understand the individuals' intention and predict the user's behavior towards the new information technology usage and new technology innovations. For one to understand this theory well, one needs to understand these other theories: Technology Acceptance Model by Davis (1989), Diffusion of Innovation by Rogers (1995) and Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis & Davis (2003).

Technology acceptance model is based on the ease of use and usefulness perception as per the Technology Acceptance Model's prediction. Diffusion of Innovation (DOI) theory, every society member is faced with individual innovation decisions that have 5 steps which include: knowledge, persuasion, decision, implementation and confirmation. If an innovation will improve utility, people tend to take it up as

suggested by the Diffusion of Innovation theory. They have to trust that the technology will have some benefits concerning why it is created. These benefits could in form of consideration of costs and the expected change in the functioning of their daily lives. They will also consider compatibility with their habits and values (Rogers, 1995).

Commercial banks in Kenya are using huge amount of money to invest in technology in order to enable self and virtual banking services which helps in improving customer quality service. Most of business goal strategy is to attain a sustainable competitive advantage by producing products which outperform those of their competitors. The commercial banks have introduced new products in order to meet increased customers' needs. Mbiti and Weil (2011) say that the leading mobile banking model in Kenya, is namely M-pesa, which has grew at a blistering pace since its inception in 2007.Pousttchi&Schurig (2009) argues that the ability to remit smaller but more frequent remittances easily, to a wide area and at low cost has popularized mobile banking.

1.1.1 Technology and Innovation Strategy

Technology refers to a system that consists of tools devices, systems, methods and procedures that make the technological process possible (Arthur, 2009). Roger (1995) defines innovation as application of better solutions to meet the existing market requirements or any considerable new improved method for the commercial creation of goods and services. Fisher (1998) notes in the current banking environment, technology falls into three specific categories when applied: customer independent, customer assisted and customer transparent customer technology.

Technology and innovation involves usage of robots, artificial intelligence, internet of things technology and data analysis which is aligned with the macroeconomic trends and the changing consumer behavior which are transforming the way the resources are consumed and produced (Pousttchi & Schurig, 2009). Information technology used in various value chains in businesses enables optimization and control function operations for ease of making decisions.

A new McKinsey Global Institute report, *beyond the super cycle: shows that technology is reshaping resources* and it pays attention to the three trends to open close to $900 billion to $1.6 trillion in terms of savings all over the economy of the world in 2035. This amount is equal to Canada or Indonesia's current GDP. The derivation of two-thirds of the total value is from the reduced energy demand due to greater productivity and a third comes from savings of productivity.

1.1.2 Mobile Banking Technology

Mobile banking is the use of mobile phone to access the banking services and facilities offered by financial institutions (Njenga, 2010). These services and facilities are such as making deposits, payment of transactions, transfer of funds and any other related financial products. The use of mobile phones has increased a lot due to improvement in Information Technology and communication (ICT). The world has been transformed by mobile gadgets such as Smartphone and tablets. As digital ways of doing business evolve, the move to mobile technology continues to offer a faster and more convenient method for customers to interact with the providers of their financial services.

Retail banking is in the fore front. Mobile banking has be accepted as a mainstream channel of banking by Retail banks rather than the earlier traditional ways of banking (Pousttchi & Schurig, 2009). For banks that seek to fully realize their potential, they must understand the preferences of customers concerning the features desired and conquer hurdles to broader adoption.

To fully realize their capability, banks need to be aware of consumer tastes and preferences depending on expected features and overcome limitations to increase their market share adoption. Retail banks have mostly advanced their mobile strategies but they need to consider the age groups and income categories. The leading mobile banking in Kenya is M-Pesa model (Mbiti, 2011).

Mobile banking has grown with high speed due to its security, convenience, simplicity and cheapness. Financial institutions have embraced this change due to its popularity where mobile telephone infrastructure by communication companies like Safaricom, Airtel, Telecom Kenya (Orange) have become the drivers of financial services in the world.

1.1.3 Competitive Advantage

Competitive advantage is a firm's unique features perceived by the market targeted as vital and superior to the competition. The argument of Thompson and Strickland (2003) is that a firm has competitive advantage when it has an edge over its competitors in securing of customers and defense against competitive forces. It occurs when, to outperform its rivals, firms develop attributes (Porter, 1985).

Porter (1985) also defines competitive advantage as the uniqueness of an organization in comparison to its competitors. It implies a distinct and ideally sustainable edge over its competitors. A competitive advantage that is sustainable comes from the core competencies that yield the company's long term benefits. Development of competitive advantage can be from specific resources or abilities which a firm possesses over the competitors.

Powell (2011) argues that Competitor intelligence should be practiced which is merely to keep an eye on our competitors. Its range must be wider for it to realize the full potential of the protecting and increasing profits discipline. Competitive Advantage therefore involves the innovation through technology and superior quality of service delivered to customers (Powell, 2011).

1.1.4 Banking Sector in Kenya

The banking sector had its roots in Kenya before independence. It started as a banking agent of National Bank of India of the setting up of the British representative office through Imperial British East African Company. The Banking Act, the Companies' Act and the Central Bank of Kenya Act are the ones which preside over the Kenyan banking industry. In 1995, this sector was liberalized and the exchange controls were put in place. Central Bank of Kenya is the one which controls all the activities of other banks through formulation and implementation of monetary policy and fiscal policy (CBK, 2016).

Kenya has 43 licensed banks, 35 microfinance banks, one mortgage finance company, 86 forex bureaus, 8 foreign banks representatives, 3 credit reference bureaus regulated by the Central Bank of Kenya (Cytonn, 2016). Over the last two years, there has been revolution in banks where some banks are in receivership and mergers and acquisition has been taking place in banks. Over the recent years, banking industry in Kenya is moving from the traditional ways of banking and adopting automation in order to cope up with the increasing customer needs and competition (CBK, 2016).

Banking industry in Kenya has been facing various challenges such as interest's margin decline and the new regulations especially in the new constitution. Commercial banks are the institutions where deposits are accepted, loans are offered and the related financial services are offered tremendous and expanded highly especially in the African region (Banking in Kenya, 2016).

1.2 Research Problem

Mobile banking technology and innovation is a crucial factor in many companies. Companies in one industry sell products and services that are similar to their competitors' product. Therefore, commercial banks seek gain a competitive edge over its rivals through service delivery and added service and product (Adewoye, 2013).According to Adewoye (2013) technology provides benefits and value that is largely efficient based. Mobile banking technology and innovation lead to competitive advantage. This includes: convenience, security and efficiency in their day to day operations. Mbiti and Weil (2011) demonstrate how Kenyans have embraced mobile technology as evidenced by the rise of Safaricom as the giant mobile services provider in the East African region.

Competitive advantage of commercial banks is greatly affected by strategies adopted by commercial banks for service delivery. Because of this, it is very important for these commercial banks to take good considerations of their strategies and work on adopting these strategies. CBK (2016) argued that indeed consumer needs are ever changing leading to innovations of financial products, technological advancement and the use of multiple delivery channels.

In a study carried out by Santovec (2011) in Wiscons which used descriptive research design and questionnaires were used to collect data found that mobile banking and innovation helps the banks to remain competitive, expand their product base increase their delivery channels, and improve their marketing systems. Commercial banks face challenges such as long queues, processing payment, operational costs such as salary expense, huge paperwork for the banker and the customer.

Various studies have been carried out on strategies utilized overtime, by the commercial banks. Lee et al (2007) also carried out a similar study with the aim of establishing the factors that are important in South Korea. The research was a survey of six firms and 159 management staff that provided qualitative data through the Likert scale. The study utilized simple regression technique to analyze the data. Bellamy (2010) explored how implementation of new technology is perceived and processes of planning, and organizational climate dimensions have on the effectiveness of the deployment of new technology. The survey was done on 100 employees in 6 different types of organizations that had had new technology installation recently. The study revealed that one of the factors is improved efficiency and thus performance.

Adewoye (2013) conducted a study on the effect of Mobile Banking on Delivery of Service in the Commercial Banks of Nigeria. A questionnaire was used to collect data from 20 commercial banks. Purposive sampling was used in the bank selections while randomly selecting bank staffs. Frequency table, percentage and mean score was used in analysis of the collected data while (Chi-square), a non-parametric statistical test was used in testing of the hypothesis formulated using STATA 10 data analysis software.

Munaye (2009) studied the mobile banking application as a strategic response to challenge the external environment by Equity Bank Kenya, limited. The research design adopted by the study was descriptive research design. The study collected primary data using interview guide and used content analysis to analyze data. Kigen, (2010) carried out studies on the effects of mobile banking on the costs of transactions of the institutions of microfinance. The sample size constituted of all the microfinance institutions in Kenya as at December 2016. Questionnaires were utilized in gathering primary data.

Mbiti and Weil (2011) demonstrate how Kenyans have embraced mobile technology as evidenced by the rise of Safaricom as the giant mobile services provider in the East African region. Research methodology was done through analyzing data from two waves of individual data and aggregate data on financial access. Another study on innovativeness and Firm Performance was taken by Kiraka (2013) where the aim of the research was to show the then knowledge state concerning the relationship between innovation and performance in general and for SMEs in particular. The analyzed previous studies above, it can be noted that the existing studies did focus on either mobile banking technology or innovation in gaining competitive advantage.

This study sought to establish the impact of mobile banking technology and innovation in achieving advantage for commercial banks in Kenya and therefore the study was directed by a research question; what is the impact of mobile banking technology and innovation in achieving competitive advantage for commercial banks in Kenya?

1.3 Research Objective

The objective of this study was to determine the impact of how adoption of mobile banking technology affects competitiveness of commercial banks in Kenya.

1.4 The Value of the Study

This study is of value to all commercial banks since mobile banking technology has taken the center stage to all institutions not only banking industry. It has helped the commercial banks' decision makers who are involved in implementation of information technology usage in different levels in management. It has provided the useful insights into how to utilize mobile banking technology in enhancing performance and meet customer needs.

This study has also contributed the knowledge to researchers and academicians in the sited area. It has also opened eyes for further research on the area and directions to be taken. The proposed study is also expected to contribute to knowledge of both researchers and academicians in this technologically important area of competitive service delivery. In addition, the study has suggested directions for those who seek to explore and carry out further investigations.

This study has helped the policy makers in the government and financial institutions with a deeper understanding of how mobile banking technology is changing the financial market. The study has assessed how effective the mobile banking technology is helping to achieve financial inclusion.

If the study finds mobile banking technology to be a strong strategy toward financial inclusion, policy makers and financial institutions can then moot strategies that can embed mobile banking technology in the financial sector for the sake of economic growth and poverty reduction. The study has brought more insights to the theory of information technology acceptance and theory of diffusion theory. The study finding has guided the users and the field of strategic management with respect to applicability of theories in management.

A study finding with a positive relationship may convince that the technology will have some advantage concerning why it is created. It has further propelled adoption of innovation by various organizations. This chapter gives a general background to the study covering the following areas: The background, a discussion of the study variables: the concept of strategy, mobile banking technology, innovation strategy and competitive advantage. Statement of the problem, the objective of the study and value of the study to researchers, academicians, policy makers, to theoretical literature.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The focus of this chapter is on the theoretical foundation. Theoretical foundation consists of information technology acceptance theory and diffusion innovation theory. These two theories will guide study with regard to mobile banking technology and innovation as a strategy of competitive advantage for commercial banks. The empirical literature covered a number of studies to show that mobile banking and innovation strategy has continuously affected the profitability of banks, savings, delivery of service, customer service and operations of banks which have affected positively the growth of the banking industry.

The literature on the concept of competitive advantage is also covered in this chapter. It discusses into detail the definition and strategies that lead to competitive advantage. These strategies include; cost leadership strategy, focus strategy and differentiation strategy. Focus strategy identifies segments of the market where the company can efficiently compete.

Lastly, the chapter is also inclusive of conceptual framework. Conceptual framework expresses the link between the dependent variable (mobile banking technology and innovation strategy) and the dependent variable (competitive advantage). Competitive advantage can be achieved through increased efficiency, secure financial services, accessibility of financial services and convenient financial services.

2.2 Theoretical Foundation

Scientists use a theoretical framework, a collection of concepts that are interrelated when carrying out researches to formulate theories. It is a parameter or boundaries foundation for a study. This study is guided by the Information Technology Acceptance theory and diffusion of innovations theory. The theory can be understood better if studied under other theories as discussed below.

2.2.1 Information Technology Acceptance Theory

The central focus of Information Technology (IT) Acceptance theory understands intentions of individual's ad predictions of user's attitude towards new facts of Information Technology and new innovations technology. To understand the IT acceptance theory, one has to understand several other acceptance theories like as Technology Acceptance Model (TAM) by Davis (1989), Diffusion of Innovation (DOI) by Rogers (1995), Unified Theory of Acceptance and Use of Technology (UTAUT) discussed by Venkatesh et al (2003).

According to Diffusion of Innovation (DOI) theory, every society member is faced with individual innovation decisions that have 5 steps which include: knowledge, persuasion, decision, implementation and confirmation. In the knowledge step, a person's awareness and functionality is created of an innovation is created. In the step of persuasion, an attitude, favorable or unfavorable is formed towards an innovation by an individual. In the decision the person gets engaged in actions that lead to making choice on whether to adopt or reject the innovation. The implementation involves the person putting to use, the innovation adopted.

Finally, the confirmation stage which involves the evaluation of whether the decision to adopt the innovation was worthwhile or not (Rogers, 1995).The suggestion of the DOI theory is that people only adopt an innovation that they believe their utility will be improved. They need to trust that the technology will have some benefits concerning why it is created. These benefits could be in form of consideration of costs and the expected change in the functioning of their daily lives (Rogers, 1995).

2.2.2. Diffusion of Innovations Theory

This theory of technology was put forth by Rogers (2003). Technology is an instrumental action design that decreases cause-effect relationship uncertainty concerned in the attainment of the outcome desired. There are four crucial features of the theory of innovations.

They are: innovation, communication channels, time and social system. Innovation diffusion process takes place in five stages: the knowledge stage, the persuasion stage, the decision stage, the implementation stage and the confirmation stage. In the knowledge stage an individual learns that an innovation exists and seeks further information regarding it Awareness knowledge involves a person knowing an innovation exists. How-to-knowledge includes how to use correctly uses the innovation while the principles knowledge involves knowing functioning principles describing how and why an innovation works (Rogers, 2003).

In the persuasion stage, the person forms an attitude which can be either positive or negative towards innovation. At this stage the formation of the attitude does not always depict a direct or indirect adoption or rejection of the innovation. This stage is more affective. In the stage of decision making an individual decides whether to adopt or reject the innovation.

The final stage which is implementation involves putting an innovation into practice but with some degree of uncertainty about the outcomes of the innovation. Some technical assistance is needed in this stage. In the confirmation stage, the individual looks for support for his or her decision (Rogers, 2003).This theory is important to this research since spells out the manner in which new innovations spread. An innovation will, therefore, spread if people get to know about it and get persuaded that it is good, if they decide to adopt and implement it and if others confirm it as a good choice. A failure at any stage will hinder the spread of the innovation.

2.3 Competitive Advantage

In recent years organizations come up with business strategies that will help them to develop a competitive advantage. Porter (1985) argued that competitive advantage exists when a firm provides a product or a service that is perceived by its target market customers to be superior to that of its competitors. Competitive advantage is a major factor that drives a firm‘s performance in competitive markets. Calantone (2000) noted that a firm has competitive advantage when it implements a strategy that competitors are unable to duplicate or find too costly to try to imitate.

Porter (1985) proposes that a firm’s competitive advantage is determined by its competitive scope or the breadth of the business unit’s target market. The firm can either choose a broad target market like mass market or narrow target like a specific market niche. Additionally Porter (1985) argues that competitive advantage fundamentally grows from the value created by a firm for its buyers that surpasses the cost incurred by a firm in its creation.

A firm should have the capability of delivering similar advantages as competitors though at a lower cost (cost advantage) so as to deliver value to target market or deliver benefits that surpass the ones by competitors (differentiation advantage). Therefore a competitive advantage allows for creation of superior value by a firm for its consumers and for itself, it creates superior profits (Calantone, 2000). By executing the vast generic strategies, a firm can create and maintain competitive advantage in an industry.

A low cost strategy, according to Njoya and Niemeier (2011) provides an impermanent competitive advantage which has not yet been utilized. It is improbable for cost leadership strategy to offer competitive advantage Powell (2011).The marketing group website, Lion's share, shows that community banks are normally unable to attain cost advantage, mostly in direct competition with bigger, high volume organizations. The resource scarcity does not allow firms to trail all the competitive bases (Prajogo& McDermott (2011); Henderson, 2011). Most firms wish to have competitive advantage from at least one dimension but it is unusual for an organization to compete in all the three dimensions (Henderson, 2011; Porter, 1985).

Chowdhury (2011) description of competitive advantage is the differentiation result. He differentiates further, the two differentiation advantage types: innovation ad market differentiation. According to Li and Zhou (2010), firms have several ways of differentiating themselves. For example, offering innovative elements, launching efficient promos, superior service provision and strong brand name development among others.

Competitor orientation, according to earlier researches, can possibly lead to cost advantage (Han, Kim and Srivastava, 2008). The findings of Adewoye (2013) were that the least important element for consumers when they assessed their business relationships with banks was price competitiveness. Warf & Barne (2007) states that focus strategy recognize the segments of markets where the firm can efficiently compete.

To choose the areas where the company's resources can produce the desired sales volumes, revenues and profits, the strategy market matches the characteristics of the market with resources of the company that will lead to competitive advantage over other firms. A strategy that is focused will target the segments of the market that are less susceptible to substitutes or to earn above average on investment returns where the competition is weakest.

Application of focus strategy can applied through cost, quality, brand and service. Using cost focus strategy requires a firm to divide its market to portions which you can attain a low cost and that are cost effective. Quality focus strategy allows concentration on promotional resources that are equivalent to your quality advantage. Not having to compete on low price allows you to cover higher costs concerned with identification and attainment of the high value segment. The strategy of brand focus includes promotional activities carried out to inform the interested consumers in the company's brand availability (Warf &Barne, 2007).

2.4 Technology & Innovation Strategy and Competitive Advantage

A firm that delivers its products to the market at the right time and at the right place is likely to have a competitive advantage. This can be made possible if a firm is likely to incorporate technology and innovation in its business strategies. Commercial banks have noticed the impacts, benefits and implications of technology and innovation more so which enables banks to optimize and control the operations for quick decision making.

Information Technology and innovation can add a value to the firm by reduction of cost and through bringing efficiency and effectiveness to the firm. A product or a service has a competitive advantage if it gives more symbolic value and its attribute for consumer than a competing product or service (Pousttchi & Schurig, 2009). Firms can also use information technology to achieve its competitive advantage according to Venkatesh, Morris, Davis, and Davis, (2003). Venkatesh et al (2003) says that firms producing information technology products or services will enable short development cycles, support functions and hence gain competitive advantage.

According to Pousttchi & Schurig (2009) products that get into the market first may reap one-third more profit than the products that arrive later. Commercial banks can choose to use the information technology as a way of gaining competitive advantage through cost leadership and differentiation strategies (Porter,1985), which are concerned with the market size or market share, ease of production, tight controls and width of product line. A recent report by Santovec (2011) showed that 70% of customer service application account is supported by information system in 51 firms.

2.5 Empirical Studies and Knowledge Gaps

Different studies have shown that mobile banking technology has some positive effects on profitability of banks, savings, money exchange, delivery of service, customer service, and operations of banks which positively affect the growth of the banking industry. Chatain, Coss, Borowik, and Zerzan(2008) conducted a study to establish the integrity in mobile phone financial services with the goal of finding out measures that could be taken to mitigate the risks from money laundering and terrorist financing.

The study established the great potentiality of mobile phones in turning into a common way of conducting financial transactions globally. The study estimated that mobile phones as a tool of communication are used globally. The mobile phones are even available to the low income and remote populations. For about three billion people who do not hold bank accounts, mobile telephony offers an effective alternative. This study indicates that increase in the use of mobile phone has enables access to banking services.

Malhotra and Singh (2009) reviewed the impact of web based banking on bank achievements and hazards. They discovered that large web banks are bigger, beneficial and have efficient operations. They likewise discovered that web banks have higher resource quality and can bring down building and equipment expenses. Indian internet banks depend considerably on savings. Smaller banks which use internet banking had experienced a decrease in profitability.

Adewoye (2013) carried out a study on service delivery impact by mobile banking in the commercial banks in Nigeria and revealed that mobile banking improves delivery of services in banks in several ways such as convenience of transaction, saves time, fast transaction alert and save cost of service which has restored the relationship ad satisfaction of customers. The study recommends that the management of commercial banks should create public awareness to inform the people about the advantages resulting from the mobile banking service. Manpower who are skilled should be hired to prevent manipulation of the data of the banks and stealing money from the accounts in banks by fraudsters and hackers.

Adewoye (2013) further recommends that provision and maintenance of public network system, such as telephone is key to the effective operation of the mobile banking service. Lin and Shih (2013) conducted a study which aimed at promoting the use of mobile transaction services. They also summarized 13 service items affecting mobile banking transactions, functional programs, and accessibility programs. The study designed questionnaire using the Analytic Network Process.

The study used three experts from the finance industry and academia to compute the weights and find out the optimum program accordingly. The suggestions from the findings were proposed for functional programs that could be provided to the banking industry. One of the key aspects of the recommended programs was service quality enhancement. This showed that an innovation in financing could reach more people if it had the capacity to provide high quality services.

Kigen (2010) contemplated the effect of versatile banking on exchange expenses of MFI establishments. He discovered that at that time versatile savings had diminished exchange expenses significantly however not specifically observed by banks due to the little client numbers. He sought to explore the effect that portable savings had on value-based expenses of MFI establishments.

Rachel (2013) analyzed the impact of versatile savings upon the monetary performance of business banks in Kenya. Illustrative or descriptive research outline was used. The sample size constituted of 43 business banks working in Kenya as at December 2012 and 6 mobile utility administrators and. The aggregate sums exchanged through the mobile phone for as far back as 5 years were gathered and the quantity of clients was relapsed against banks performance as assessed by Investment returns. The research established that there exists a feeble positive correlation amongst mobile savings and the monetary execution of business banks in Kenya.

A study by Jepleting, Sangoro and Bureti (2013) sought to find out how mobile banking contributed to customer satisfaction at Equity bank in Eldoret town. The study was a descriptive research using a sample size of 213 respondents who were selected through stratified and purposive sampling a population of 2,130 employees, bank customers and agents. Self-administered questionnaires and interview schedules were used to obtain information from the respondents. The analysis of the data showed that almost everyone using mobile banking services currently were contended with the efficient and reliable services provided to them.

Anyango, Kathuo and Rotich (2015) studied the impact of mobile banking on the financial achievements of Kenyan business banks. Descriptive research outline was utilised in the study. The sample size constituted of 42 existing Kenyan business banks as at December 2014. Questionnaires were utilized in gathering primary data. The examination of quantifiable information was restricted to clear measurements and subjective information was displayed through descriptions.

From the study the volume of mobile exchanges had expanded in most recent 5 years after the initiation of m-banking. This chapter discussed theoretical review by focusing on the Information Technology Acceptance Theory and Diffusion of Innovations Theory. Literature on competitive advantage was also covered. The empirical review presented both global and local literature on mobile banking.

Lastly, a conceptual framework was presented to explain the relationship between the independent variable (Mobile banking technology and Innovation strategy) and the dependent variable (competitive advantage). The aspects of competitive advantage are increased efficiency, a secure financial service, access to financial services and convenient financial services.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is contained in this chapter. It shows the various methods used by the researcher in collection, analysis, presentations and discussions of the study findings. This is inclusive of research strategy details, the various respondent categories and the method used in data collection. There will also be discussions on the methods through which sets of data will be analyzed and presented.

The research methodology included research design which explains the research design selected is a descriptive research design. A descriptive design is appropriate since it involves observing and describing the behavior of the variable without changing it in anyway. Questionnaires were employed to collect primary data from the respondents who were the operational managers of the banks

The population under study consists of all the forty three (43)commercial banks in Kenya which are licensed by the Central Bank of Kenya hence a census study was adopted. Data was then collected by the use of questionnaire which later was summarized, coded, classified and tabulated using statistical package for social sciences (SPSS). Data output was presented using statistical measures such as measures of central tendency and inferential statistics such as multiple regression analysis.

3.2 Research Design

This study used a descriptive research design. A research design is a structure, procedure and arrangement of examination to find out responses to research questions and control irregularity. According to Cooper & Schindler (2006) in a descriptive design, either the entire population, or a subset thereof is selected, and from these individuals, data is collected to help answer research questions and describe the current situation.

The study utilized primary data, which Burns and Grove (2003), describes as a tool that clearly depicts a situation in its real state of happening. The research involved administering of questionnaires to the employees of the commercial banks in Kenya. The aim is to collect data on management opinion on the impact of the mobile banking technology and innovation in gaining competitive advantage among commercial banks in Kenya.

The creation phase was flexible in regards to decisions on the administration of questions: as face-to-face interviews, by telephone, as group administered written or oral survey, or by electronic means. Standardized research questions made measurement more particular by effecting uniform definitions upon the participants as well as making sure that similar data of the variables was collected from groups then deduced comparatively.

3.3 Population of the Study

The researcher did a census study due to the small number of respondents in the target population whose responses are important in this study. Mugenda and Mugenda (1999) explain a target population as one that the researcher wants to generalize the study results. The target population of the study comprised of 43 licensed commercial banks in Kenya, and operating in between 2013 and 2016.

Cooper & Schindler (2006)states that the target population must be clearly defined so that proper sources from which data are to be collected can be identified. The population for this study was commercial banks in Kenya. According to a Banking journal from The Central Bank of Kenya, banking sector comprised of 50 institutions, 43 of which are commercial banks, 1 mortgage finance companies and 6 licensed deposit taking microfinance institution as at 31st December 2016 (CBK, 2016).

The study was a census study to establish the impact of mobile banking technology and innovation as a strategy of competitive advantage for commercial banks in Kenya. A census study is essential due to the small number of commercial banks in Kenya; it collects data on many attributes of a population and the findings are representative of the population under study.

3.4 Data Collection

In order to comprehensively study the impact of mobile banking technology and innovation as a strategy of competitive advantage for commercial banks in Kenya and to make valid conclusions, primary data was collected. This is an important approach in a census study as it provides first hand sources of information for the study (Cooper & Schindler, 2006).

The study utilized primary data. In this research, questionnaires use was considered appropriate. The study collected data sourced through an interviewer administered questionnaires which contain both closed and open ended questions. This was expected to facilitate collection of accurate information and clarifying them appropriately. The questionnaire was developed and circulated to the respondents at their work stations.

The questionnaire was divided into three sections. Section (A) captured information about general characteristics of the organization and the respondents; Section (B) captured information on mobile banking technology and innovation strategy on competitive advantage. The respondents were the operations managers.

3.5 Data Analysis

Once the data was collected, it was summarized, coded, classified and tabulated. Data classification reduces data into homogeneous attributes that enable establishment of meaningful relationships between variables. Data was analyzed mainly through the use of descriptive statistical such as measures of central tendency and inferential statistics such as multiple regression analysis.

According to Pearson (1908) the purpose of multiple regressions is to learn more about the relationship between several independent variables and a dependent variable. In addition to this computer application packages especially SPSS was used in the analysis of information and reporting of data. The model to be used in the study takes the form below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where; Y= the dependent variable (Competitive advantage)

α - Is a constant; the concept explaining the level of competitive advantage given and it's the Y value when all the predictor values (X_1, X_2, X_3, X_4) are zero, β_1, β_2, β_3, β_4 – Are constants regression coefficients

Y= Competitive advantage X1 –Increased efficiency

X2 – Secure financial services X3 – Access to financial services

X4 –Convenient financial services ε - (Extraneous) Error term

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter focuses entirely on data analysis, interpretation, and presentation of the findings of the data collected for the study. The study sought to determine the impact of adoption of mobile banking technology and innovation strategy on the competitiveness of commercial banks in Kenya. As such help provide useful insights into how to utilize mobile banking technology in enhancing performance and meeting customer needs.

The study also targeted to help the commercial banks' decision makers who are involved in the implementation of information technology usage in different levels in management. The knowledge of mobile banking technology and innovation strategy is a key competitive edge in any banking industry. The target population of the study comprised of 43 licensed commercial banks in Kenya, and operating in between 2013 and 2016.

To get the wider information the questionnaire covered age brackets, gender, educational background, bank profile which aimed at showing the ownership and how long the has been operating in the country, industry experience, expertise and evaluation of the competitive advantage effects of the mobile banking technology and innovation strategy. This chapter gives descriptive statistics of the various variables under study through use of graphs, pie charts and tables.

4.2 Presentation of the Results

Different categories of background information were inquired from the individual respondents from the various commercial banks. The categories broadly included the respondents profile and the bank profile. All categories were analyzed and the findings of the data presented.

4.2.1 Response Rate

The questionnaires were issued to 43 licensed commercial banks in Kenya. Out of these, only 40 commercial banks participated by duly filling in the questionnaires. This represented 93.02 percent of the target population. According to Mugenda and Mugenda (1999) a sample size that is 50 percent of the population is good enough since it takes into account the maximum variability in a population. Table 4.1 illustrates the response rate.

Table 4.1 Response Rate

Respondents	Frequency	Percentage (%)
Target Population	43	100
Response Rate	40	93.02

Source: Primary data, 2017

The study targeted a population of 43 licensed commercial banks in Kenya. However, 40 of those banks participated duly by answering the questionnaires. This number represented 93.02% of the target population. This represents enough sample size for its results to be drawn as inference for the entire population.

4.2.2 Respondents Profile

In order to come up with a comprehensive respondent profile the study inquired different varied aspects from the respondents. They included: gender, age brackets, educational level, bank experience, career orientation.

4.2.2.1 Gender

One of the key pieces of background information that the researcher sought to determine was the gender profile of the respondents. The results are presented below in the figure below.

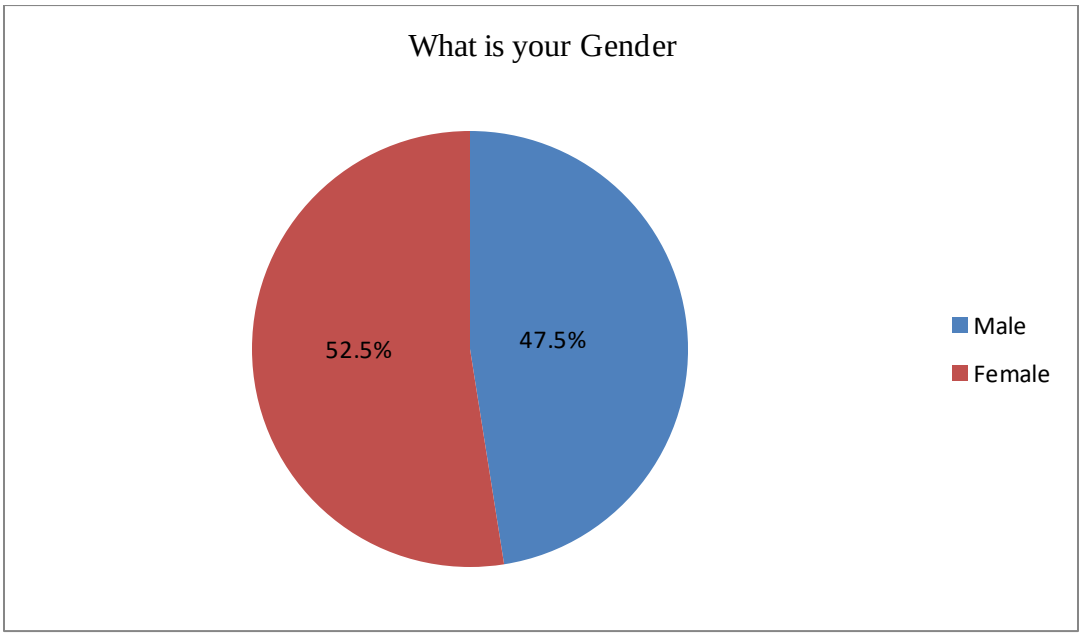

Figure 4.1 Respondent Profile
Source: Primary data, 2017

The study tried as much as possible to achieve a gender balance of the respondents. This is clearly illustrated in the pie chart above. Nevertheless a majority of the respondents were female contributing 52.5% of the respondents and their male counter parts comprising of 47.5 % of the study.

4.2.2.2 Age Bracket

In order to establish the age bracket of the various respondents taking part in the study the researcher classified age into 5 categories. They include below 20 years, 21-30 years, 31-40 years, 41-50 years and above 50 years. The findings are presented in figure 4.2.

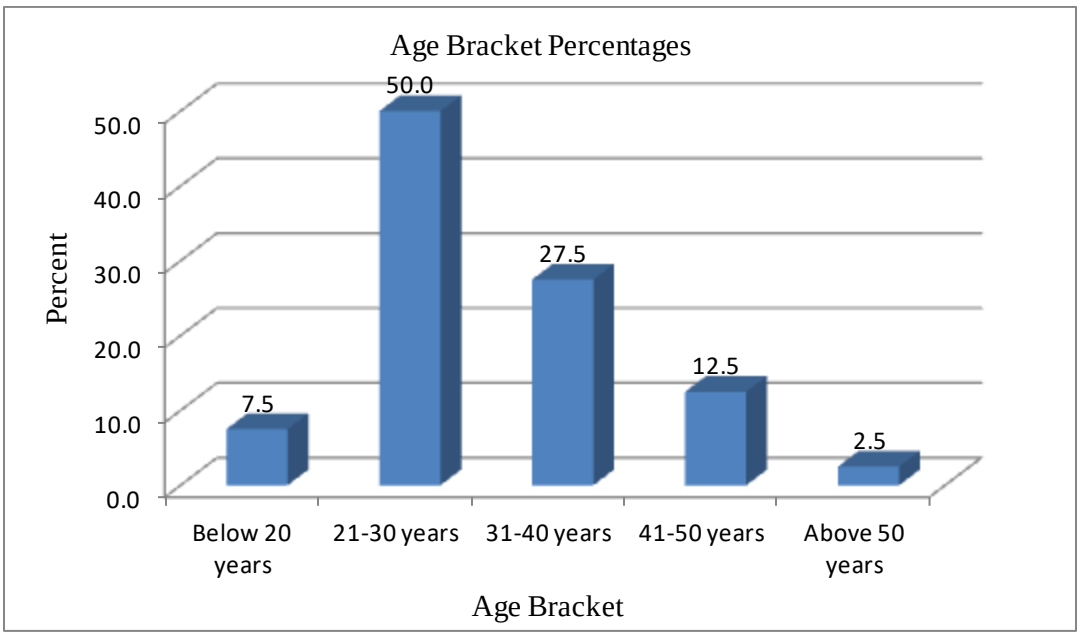

Figure 4.2 Age Bracket Percentages
Source: Primary data, 2017

There was a clear indication that the largest number of people working in the banking sector range between the ages of 21 to 40 years. This is captured by the study. A majority of the respondents 50% were between the ages of 21-30 years.

This was closely followed by the people between the ages of 31- 40 who accounted for 27.5% of the total respondents. 12.5% of the respondents fell between the ages brackets of 41-50 years. Those below the age of 20 years contributed to 7.5 % of the study respondents. The least participant group was above 50 years of age accounting to 2.5% of the total respondents.

4.2.2.3 Educational Level

To determine the highest level of education of the respondents the study divided the education category in to 4 categories; certificate, diploma, undergraduate and post graduate. The findings are shown in figure 4.3.

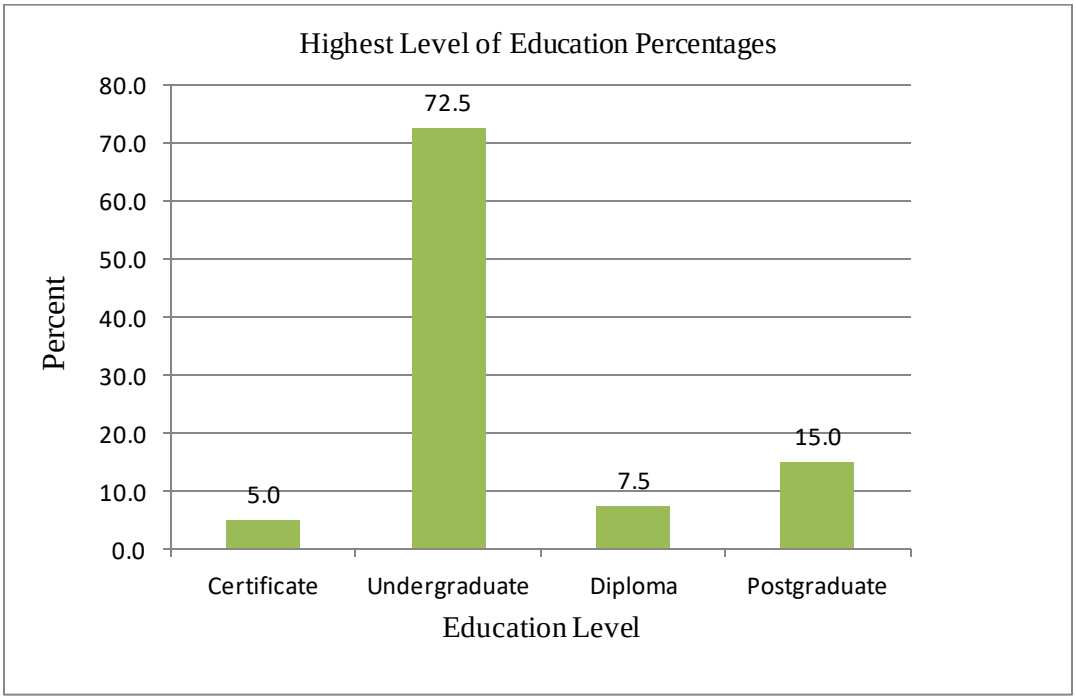

Figure 4.3 Highest Level of Education
Source: Primary data, 2017

The figure above suggests that the largest number of bank employees have attained their undergraduate studies as their highest level of education, contributing to 72.5 % of the total respondents. 15% of the total population had post graduate studies as the highest level of education. The people with diploma and certificate courses were the least each contributing 7.5% and 5% respectively.

4.2.2.4 Banking Experience

The researcher sought to establish the banking experience of the individual respondents in the banking industry. To do this the study divided the banking experience category into 5 sub categories. Less than 1 year, 1-3 years, 4-7 years, 8-11 years, and over 11 years. The descriptive are presented in the figure 4.4.

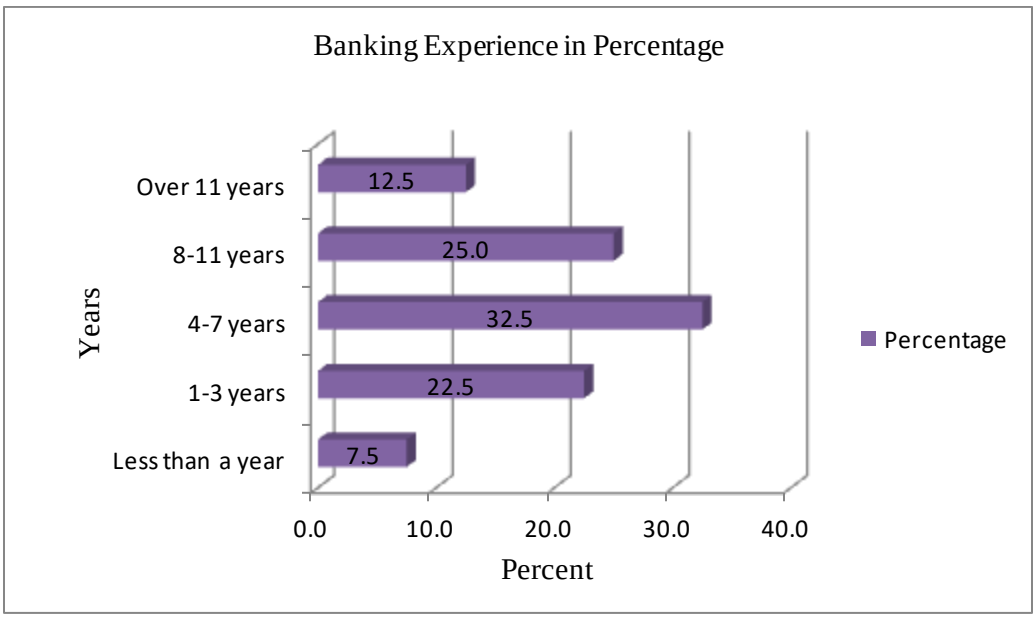

Figure 4.4 Banking Experience
Source: Primary data, 2017

The largest proportion of respondents had a banking experience between 4-7 years accounting for 32.5% of the population. Those with a banking experience between 8-11 years contributed to 25% of the study respondents. 22.5% of the respondents had a banking experience between 1-3 years while those with over 11 years of banking experience accounted for 12.5% of the respondents. The people with least banking experience less than a year accounted for 7.5% of the study participants. As such it would be true to infer a majority of the people in the banking sector have worked there for more than 4 years since they collectively represent 70% of the total respondents.

4.2.2.5 Career Orientation

To determine the specific career of the individual respondents the study listed the most common types of banking careers for the respondents to choose from. The results were as tabulated in table 4.2.

Table 4.2 Career Orientation

Specified Career Orientation	Frequency	Percentage (%)
Accounts	2	5.7
Marketing	2	5.7
Operations	12	34.3
IT Professional	19	54.3
Total	35	100.0

Source: Primary data, 2017

54.3% of the respondents were IT professionals. 34.3% were in the operations sector. The least dominated career orientation were Accounts and Marketing each contribution 5.7 % of the total respondents respectively.

4.2.2.6 Other Career Orientation

Taking into account that there could be other career orientations other than the stated ones by the questionnaire used for the study. The researcher gave the respondents an opportunity to state their other career orientations. The results are presented in the table 4.3.

Table 4.3 Other Career Orientations

Other Career Orientations	Frequency	Percentage (%)
Specified Career Orientation	35	87.5
Business banker	1	2.5
Customer services	1	2.5
Finance	1	2.5
Gender and human rights	1	2.5
Other	1	2.5
Total	40	100

Source: Primary data, 2017

Moving from the specified career orientation stated earlier accounting for 87.5% the respondents also stated their other career orientations. An equal number of respondents 2.5% stated their other career orientations included business banker, customer services, finance, gender and human and other respectively.

4.2.3 Bank Profile

To gather details about the banks profile the study gathered key pieces of information about the bank profile. They Included: number of years the bank has been operational, ownership of the bank, number of employees and existence of an IT department in the bank.

4.2.3.1 Number of Operational Years

In order to determine how long the specific banks had been operational in Kenya the study divided the length of the bank in 3 categories. Less than 10 years, 11-20 years, 21-30 years. The findings are presented below.

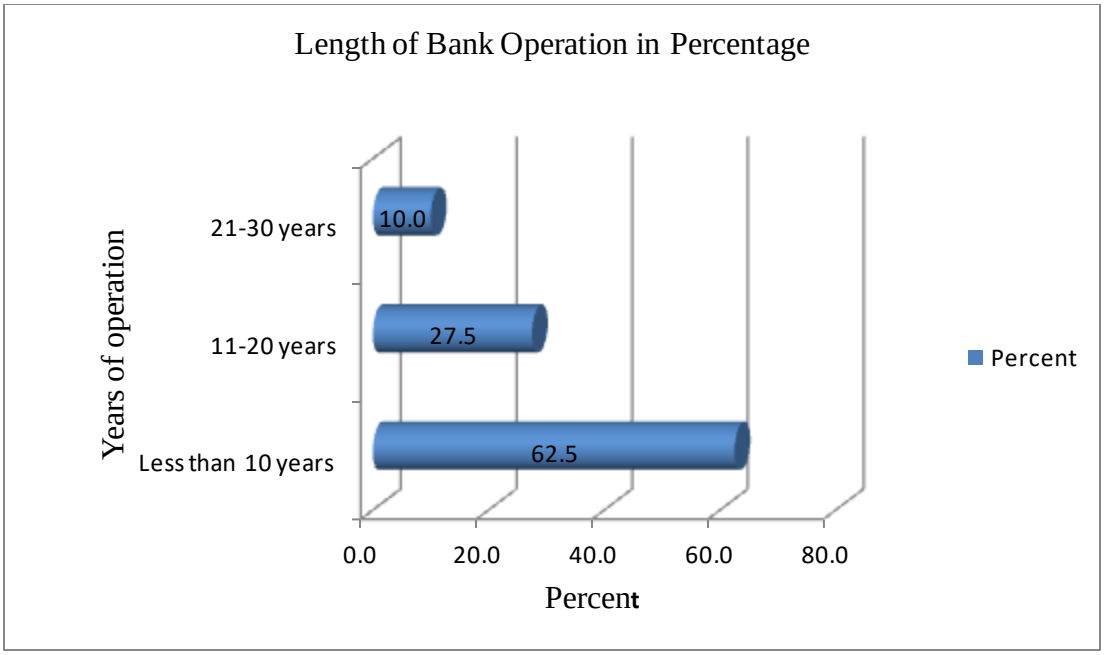

Figure 4.5 Length of Bank Operation
Source: Primary data, 2017

The largest share of licensed commercial banks operating in Kenya between the time period 2013 to 2016 had less than 10 years length of bank operation accounting for 62.5%. 27.5% of the bank had been operation between the years 11-20 while the smallest portion 10% were banks that had been in existence for a time period between 21-30 years.

4.2.3.2 Ownership of the Bank

To determine the ownership of the banks the study classified this category in to three broad groups. Locally Owned, Foreign Owned, Both Local/ Foreign Owned.

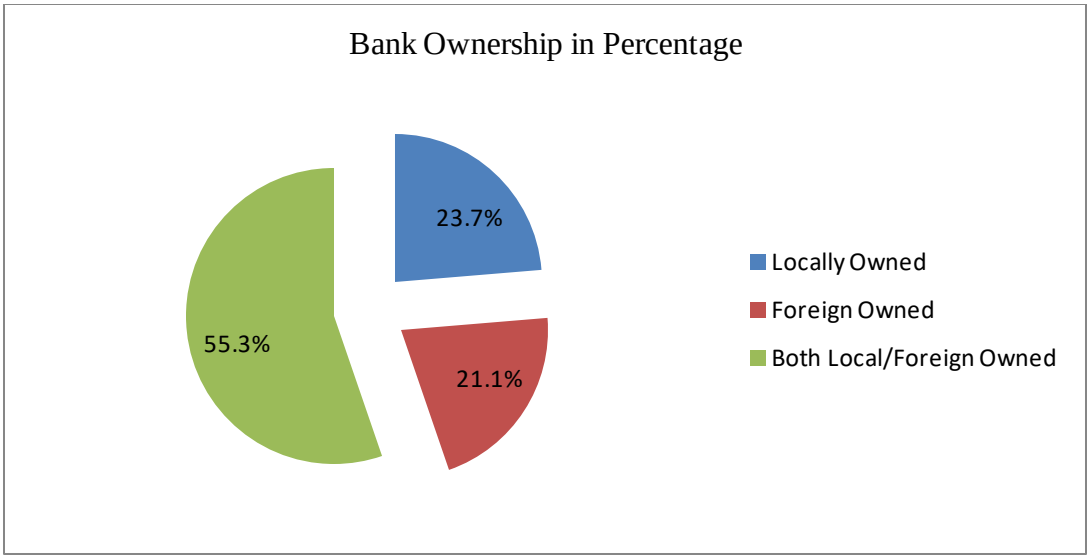

Figure 4.6 Bank Ownership
Source: Primary data, 2017

The largest number of banks in Kenya 55.3% had both local and foreign ownership. 23.7% of the banks had solely local ownership while 21.1% had foreign ownership only.

4.2.3.4 Number of Employees

The study also sought to establish how many employees each individual bank had. The findings are as presented in figure 4.7.

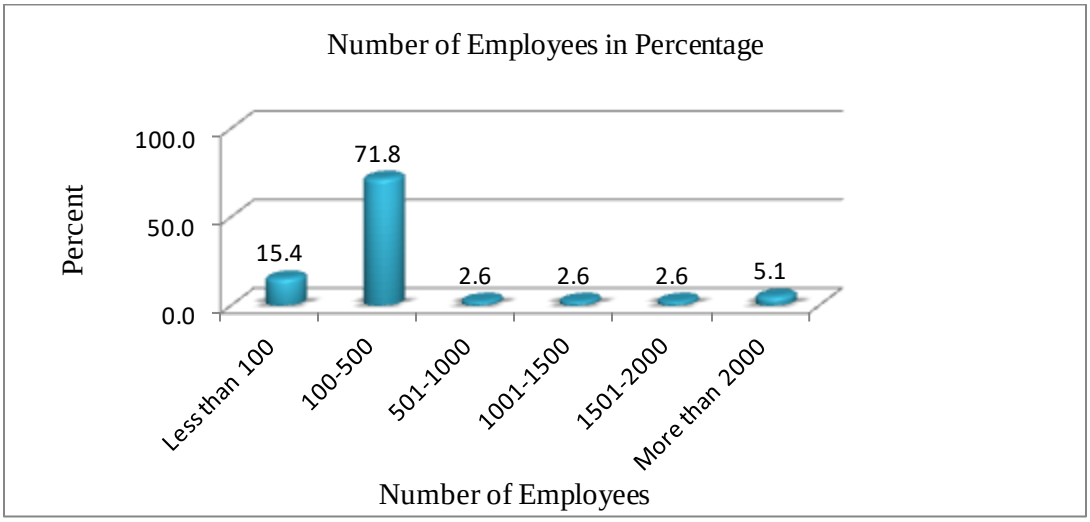

Figure 4.7 Numbers of Employees
Source: Primary data, 2017

A large number of banks 71.8% had between 100-500 numbers of employees. This number closely followed by those with less than 100 employees contributing 15.4 % of the total respondents. The banks with more than 2000 employees' represented 5.1% of the total respondents. Those with employees between 501-1000, 1001-1500, 1501-2000 each accounted for 2.6% of the respondents respectively.

4.2.3.4 Existence of an IT Department in the Bank

The study also sought to find out whether there was an IT department in the Bank. The results presented in figure 4.7.

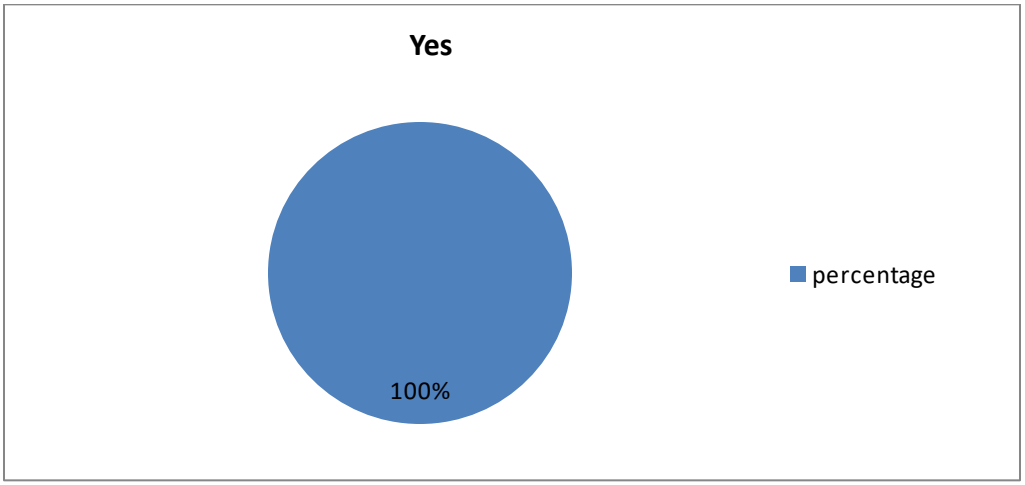

Figure 4.8 Existence of an IT Department
Source: Primary data, 2017

All the respondents 100% acknowledged that there existed an IT department in their respective banks.

4.3 Extend of Investment in Technology in the Bank

This section of the study focuses on the extent of the technology investment in the various banks. The various aspects that the study captured included: the cost of IT, Expenditure on development of IT, Training cost to improve IT skills, Atms, Money transfer systems, Mobile banking, Tele-banking and Internet banking- direct access to your account. These aspects were analyzed and the results presented.

4.3.1 Extend of Investment in Technology

With the aim of establishing the extent of investment in technology that the various banks have invested in the study divided this category in various sections that were rated with a Likert scale. The Likert scale was divided into five points, where 1= Not at all 2= little extent 3= Moderate extent 4= Great extent 5= Very great extent. The table below shows the finds.

Table 4.4 Extent of investment in Technology

Extent of Investments in Technology	N	Mean	Standard deviation
Cost of IT Development	40	4.44	0.598
Expenditure on development of IT	40	4.38	0.59
Training cost to improve IT skills	40	4.79	0.891
Atms	40	4.54	0.6
Money transfer systems	40	4.62	0.59
Mobile banking	40	4.56	0.68
Tele-banking	40	4.41	0.785
Internet banking direct access to your account	40	4.49	0.823

Source: Primary data, 2017

The respondents were asked to rate some of the ways they felt their respective banks invested in the technology sector in the bank. The various means of each category serve to explain the respondent feeling towards the investment. Means that tend to 1 capturing the feeling of nothing much has been invested, means towards 2 capture a little investment extend, towards 3 moderate investment extend, towards 4 great extent and those towards 5 very great extent.

The table above shows that the respondents agree to a very great extent ($4.49 \leq \text{mean} \leq 4.79$) that Training cost to improve IT skills with a mean 4.79 and standard deviation 0.891, mobile banking with a mean of 4.56 and standard deviation of 0.68 and Internet banking direct access to your account with a mean of 4.49 and standard deviation of 0.823 were some of the major ways that there banks invested in technology.

The respondents also acknowledge to a great extend (4.38 ≤ mean≤ 4.44) that the cost of IT investment with a mean of 4.44 and standard deviation of 0.5938, Tele-banking with a mean of 4.41 and 0.785, expenditure on development of IT with a mean of 4.38 and standard deviation of 0.59 were the other ways that their respective bans had invested in technology.

4.4 Extent of Application of Technology in your Bank

In this part of the study the researcher sought to determine the extent of application of technology in the various banks. Among the aspects that the study sought to capture include: credit card services, truncation and cheque imaging transmission, account opening process, settlement of payment on a gross basis in real time, loan approval process, call center, sales force automation. The data was analyzed and the results presented.

4.4.1 Application of Technology in the Bank

In order establish the extent of application of technology in the individual banks the study employed a likert scale to rate the extent of application. The Likert scale was divided into five points, where 1= Not at all 2= little extent 3= Moderate extent 4= Great extent 5= Very great extent. The table below shows the finds.

Table 4.5 Application of Technology in the Bank

Areas that are automated	N	Mean	Standard Deviation
Credit card services	40	4.3	1.018
Truncation and cheque imaging transmission	40	4.53	0.64
Account opening process	40	4.65	0.622
Settlement of payment on a gross basis in real time	40	4.45	0.677
Loan approval process	40	4.43	0.844
Call Centre	40	4.53	0.599
Sales force automation	40	4.2	1.091

Source: Primary data, 2017

The respondents were asked to rate some of the areas of automation in their banks. They acknowledged that to a very great extent ($4.45 \leq mean \leq 4.65$) that account opening process with a mean of 4.65 and standard deviation of 0.622, truncation and cheque imaging transmission with a mean of 4.53 and standard deviation of 0.64, call center with a mean of 4.53 and standard deviation of 0.599 and settlement of payment on a gross basis in real time with a mean of 4.45 and 0.677 were some of the automated areas in their banks.

They also noted to a great extent ($4.2 \leq mean \leq 4.43$) that loan approval process with a mean of 4.43 and standard deviation of 0.844, credit card services with a mean of 4.3 and standard deviation of 1.018 and sales force automation with a mean of 4.2 and standard deviation of 1.091 were there other ways through which the bank applies technology.

4.5 Extent of Competitive Advantage

To determine the extent of competitive advantage for the different banks the researcher collected information on various categories. They included: expanded geographical reach, increased visibility of your bank through search engine marketing, increased your turnover and profitability, provided 24/7/365 availability of your resources, reduced marketing and advertising costs, enabled you collect customer data, reduced your operating overheads, quickened transaction processing, personalized service and high quality customer service. They were analyzed and the results presented in this section.

In order to determine how the different banks had gained competitive advantages various aspects were considered. These aspects were rated using a Likert scale divided into five points namely: where 1= Not at all 2= little extent 3= Moderate extent 4= Great extent 5= Very great extent. The results were as tabulated in Table 4.6.

Table 4.6 Extent of Competitive Advantage

Statement	N	Mean	Standard deviation
Expanded geographical reach	40	4.26	0.891
Increased visibility of your bank through search engine marketing	40	4.32	0.702
Increased your turnover and profitability	40	4.29	0.768
Provided 24/7/365 availability of your resources	40	4.42	0.683
Reduced marketing and advertising costs	40	4.29	0.927
Enabled you collect customer data	40	4.34	0.708
Reduced your operating overheads	40	4.39	0.855
Quickened transaction processing	40	4.42	0.642
Personalized service	40	4.53	0.557
High quality customer service	40	4.61	0.495

Source: Primary data, 2017

The respondents were asked to rate some statements in regard to competitive advantage of their banks. They acknowledged to a very great extend (4.53≤ mean≤ 4.61) that high quality customer service with a mean of 4.61 and standard deviation of 0.495 and personalized service with a mean of 4.53 and standard deviation of 0.557 were some of the key areas of competitive advantage for their respective banks.

They also agreed to a great extent (4.26 ≤ mean≤ 4.42) that there other areas of competitive advantage were provided 24/7/365 availability of your resources with a mean of 4.42 and standard deviation of 0.683, quickened transaction processing with a mean of 4.42 and standard deviation of 0.642, reduced your operating overheads with a mean of 4.39 and standard deviation of 0.855, enabled you collect customer data with a mean of 4.34 and standard deviation of 0.708.

Increased visibility of your bank through search engine marketing with a mean of 4.32 and standard deviation of 0.702, increased your turnover and profitability with a mean of 4.29 and standard deviation of 0.768, reduced marketing and advertising costs with a mean of 4.29 and standard deviation of 0.927 and expanded geographical reach with a mean of 4.26 and standard deviation of 0.891.

4.6 Regression Model

This section provides model summary and regression coefficients of the variables used in the model. Table below shows summary model;

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.975[a]	.951	.945	.1943342

a. *Predictors*: (Constant), Extent of technology, investments, extent of technology application.
b. *Dependent Variable:* Competitive advantage

Table 4.7 shows R square of 0.951 implying that 95.1% of the total variation in competitive advantage is attributed to the changes in the changes in explanatory variables (extent of technology, investment and extent of technology application). Therefore 4.9% of the changes is due to measurement errors or other variables that were excluded from the model and are captured in the error term.

In order to investigate the relationship between the competitive advantage, extent of technology investment and extent of technology application a multiple linear regression model was fit to the data. It adopted the form:

$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$

Where; Y= the dependent variable (Competitive advantage)

α - Is a constant; the concept explaining the level of competitive advantage given and it's the Y value when all the predictor values (X_1, $X_{2,}$) are zero, β_1, $\beta_{2,}$ – Are constants regression coefficients.

Y= Competitive advantage, X1 – Extent of technology investment, X2 – Extent of technology application.

The results of the model are shown in the Table 4.7.

Table 4.7 Regression Output

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.292	0.351		3.681	0.001
Extent of technology investment	4.83	0.49	0.308	9.857	0.181
Extent of technology application	2.016	0.219	0.47	9.206	0.029

Source: Primary data, 2017

4.7 Discussion

The section provides the discussion of the findings based on descriptive analysis and inferential statistics. The study sought to examine the extent of investment in technology that the various banks have invested. The result established that to a very great extent that training has improved IT, banks have invested in money transfer systems, banks have also invested in mobile banking and internet banking direct access to account has also substantially increased. The study also established that banks have adopted tele-banking which is agreeing with Venkatech et al (2003) who argues that the use of information technology is likely to improve the performance of banks.

The study further aimed to assess the extent of application of technology in the various banks. The result showed that to a very great extent banks apply technology in account opening process, truncation and cheque imaging transmission was also used as a form of improvement in technology. Technology has also been used extensively in the settlement of payment on a gross basis in real time. The adoption of technology has also to a great extent has seen increase in loan approval process. This agrees with (Pousttchi & Schurig, 2009) who argues that the use of information technology has great impact on achieving competitive advantage.

The finding further showed that to a very great extent that high quality customer service results to competitive advantage. The study further showed that competitive advantage is attributed to personalized service. The result established that competitive advantage encompasses availability of resources, quickened transaction processing, reduced your operating overheads, increased visibility of banks bank through search engine marketing, increased turnover and profitability, reduced marketing and advertising costs and expanded geographical. The finding is consistent with Powell, (2011) who observed that involves the innovation through technology and superior quality of service delivered to customers.

The findings illustrates that firm that delivers its products to the market at the right time and at the right place is likely to have a competitive advantage. This can be made possible if a firm is likely to incorporate technology and innovation in its business strategies. Commercial banks have noticed the impacts, benefits and implications of technology and innovation more so which enables banks to optimize and control the operations for quick decision making.

This is inconsistent with Morris, Davis and Davis (2003) who says that the firms that use information technology in production reduces development cycles hence gain competitive advantage. Information Technology and innovation can add a value to the firm by reduction of cost and through bringing efficiency and effectiveness to the firm. A product or a service has a competitive advantage if it gives more symbolic value and its attribute for consumer than a competing product or service (Pousttchi & Schurig, 2009).

Firms can also use information technology to achieve its competitive advantage according to Venkatesh, Morris, Davis, and Davis, (2003). Venkatesh et al (2003) says that firms producing information technology products or services will enable short development cycles, support functions and hence gain competitive advantage. The regression coefficient result was presented in table 4.7 above and therefore the estimated model predicting the dependent variable given the values of the independent variables can be written as below;

$$y = 1.292 + 4.83x_1 + 2.016x_2$$

The estimated model illustrates that the average value of competitive advantage other factors held constant is 1.292.

The finding further shows that extent of technology investment positively influence competitive advantage and the effect is statistically significant at 5% of significance given the probability value of the coefficient of extent of technology investment is less than 5% (p-value = 0.181). This therefore implies that a unit increase in the extent of technology investment will lead to 4.83 unit increase in competitive advantage.

The finding is consistent with Venkatesh, Morris, Davis, and Davis (2003) who argues that firms can also use information technology to achieve its competitive advantage. Further Venkatesh et al (2003) says that firms producing information technology products or services will enable short development cycles, support functions and hence gain competitive advantage.

The finding is also consistent with Porter (1985) who says that commercial banks can choose to use the information technology as a way of gaining competitive advantage through cost leadership and differentiation strategies which are concerned with the market size or market share, ease of production, tight controls and width of product line. The regression result shows that extent of technology application has a positive and significant effect on competitive advantage. The regression coefficient Extent of technology application of is statistically different from zero since the probability value is less than 5% (p-value = 0.029) therefore extent of technology application is statistically significant in influencing competitive advantage.

The result therefore suggests that a unit increase in extent of technology application will lead to 2.016 unit increase in competitive advantage. The finding is consistent with Malhotra and Singh (2009) who showed that banks who embrace the use of technology have efficient operations. They likewise discovered that web banks have higher resource quality and can bring down building and equipment expenses. The regression result is also consistent with Jepleting, Sangoro and Bureti (2013) who established that efficient and reliable services provided to when the adoption of technology.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In the previous chapter, extensively analyzed the data collected from respondents in the banking industry which helped in drawing conclusion and recommendations for improvement. Therefore, it's important for researchers to draw sound recommendations and where possible come up with innovative ideas and ways of improving service delivery as with growth of technology current technology is being outdated easily.

This chapter gives a summary of the findings of the study, conclusion and recommendations. It also outlines the limitations of the study and suggestions for further research. The findings are summarized in line with the objective of the research which was to determine how adoption of mobile banking technology affects competitiveness of commercial banks in Kenya.

The summary is given based on the aspects covered in the questionnaire which were; respondents' profile which aimed at establishing the gender, experience, career orientation, age and educational level, bank profile which aimed at establishing how long the bank has been operating in Kenya, ownership and the number of employees it has, the extend of investment on technology by the banks and extend of competitive advantage.

5.2 Summary of the Findings

The objective of the study was to determine the impact of adoption of mobile banking technology on competitiveness of commercial banks in Kenya. Data was collected using questionnaires administered to 43 licensed commercial banks in Kenya. Of these, only 40 commercial banks participated by duly filling in the questionnaires representing a response rate of 93.02 percent.

From the findings on respondents' profile, a majority of the respondents were female contributing 52.5% of the respondents while the male respondents comprised of 47.5 %. A majority of the respondents, 50%, were between the ages of 21-30 years. This was closely followed by the people between the ages of 31- 40 who accounted for 27.5% of the total respondents.

12.5% of the respondents fell between the age brackets of 41-50 years while those below the age of 20 years contributed to 7.5 % of the study respondents. The least participant group was above 50 years of age accounting to 2.5% of the total respondents. 72.5 % of the total respondents had an undergraduate degree, 15% had post graduate studies as the highest level of education and diploma and certificate courses were the least each contributing 7.5% and 5% respectively.

The largest proportion of respondents had a banking experience between 4-7 years accounting for 32.5% of the population. Those with a banking experience between 8-11 years contributed to 25% of the study respondents. 22.5% of the respondents had a banking experience between 1-3 years while those with over 11 years of banking experience accounted for 12.5% of the respondents.

The people with least banking experience of less than a year accounted for 7.5% of the study participants. 54.3% of the respondents were IT professionals, 34.3% were in the operations sector and the areas of Accounts and Marketing each contributed 5.7 % of the total respondents. An equal number of respondents, 2.5%, stated their other career orientations included business banker, customer services, finance, gender and human and other respectively.

From the findings on bank profile, the largest share of licensed commercial banks operating in Kenya between the time period 2013 to 2016 had less than 10 years length of bank operation accounting for 62.5%. 27.5% of the banks had been in operation between 11-20 years while the smallest portion, 10% were banks that had been in existence for a time period between 21-30 years. The largest number of banks in Kenya, 55.3% had both local and foreign ownership. 23.7% of the banks had solely local ownership while 21.1% had foreign ownership only.

A large number of banks 71.8% had between 100-500 numbers of employees. This number closely followed by those with less than 100 employees contributing 15.4 % of the total respondents. The banks with more than 2000 employees represented 5.1% of the total respondents. Those with employees between 501-1000, 1001-1500, 1501-2000 each accounted for 2.6% of the respondents respectively. All the respondents, 100% acknowledged that there existed an IT department in their respective banks.

From findings on extend of investment in technology, the respondents agree to a very great extent ($4.49 \leq \text{mean} \leq 4.79$) that Training cost to improve IT skills with a mean 4.79 and standard deviation 0.891, ATMs with a mean of 4.54 and standard deviation of 0.6, Money transfer systems with a mean of 4.62 and standard deviation of 0.59, mobile banking with a mean of 4.56 and standard deviation of 0.68.

Internet banking direct access to your account had a mean of 4.49 and standard deviation of 0.823 was some of the major ways that there banks invested in technology. The respondents also acknowledge to a great extend ($4.38 \leq mean \leq 4.44$) that the cost of IT investment with a mean of 4.44 and standard deviation of 0.5938, Tele-banking with a mean of 4.41 and standard deviation of 0.785, expenditure on development of IT with a mean of 4.38 and standard deviation of 0.59 were the other ways that their respective banks had invested in technology.

From findings on extent of application of technology the respondents acknowledged that to a very great extent ($4.45 \leq mean \leq 4.65$) that account opening process with a mean of 4.65 and standard deviation of 0.622, truncation and cheque imaging transmission with a mean of 4.53 and standard deviation of 0.64, call center with a mean of 4.53 and standard deviation of 0.599 and settlement of payment on a gross basis in real time with a mean of 4.45 and 0.677 were some of the automated areas in their banks. They also noted to a great extent ($4.2 \leq mean \leq 4.43$) that loan approval process with a mean of 4.43 and standard deviation of 0.844, credit card services with a mean of 4.3 and standard deviation of 1.018 and sales force automation with a mean of 4.2 and standard deviation of 1.091 were there other ways through which the bank applies technology.

From the findings on the extend of competitive advantage, respondents acknowledged to a very great extend ($4.53 \leq mean \leq 4.61$) that high quality customer service with a mean of 4.61 and standard deviation of 0.495 and personalized service with a mean of 4.53 and standard deviation of 0.557 were some of the key areas of competitive advantage for their respective banks.

They also agreed to a great extent ($4.26 \leq mean \leq 4.42$) that there other areas of competitive advantage were provided 24/7/365 availability of your resources with a mean of 4.42 and standard deviation of 0.683, quickened transaction processing with a mean of 4.42 and standard deviation of 0.642, reduced your operating overheads with a mean of 4.39 and standard deviation of 0.855, enabled you collect customer data with a mean of 4.34 and standard deviation of 0.708, increased visibility of your bank through search engine marketing with a mean of 4.32 and standard deviation of 0.702, increased your turnover and profitability with a mean of 4.29 and standard deviation of 0.768, reduced marketing and advertising costs with a mean of 4.29 and standard deviation of 0.927 and expanded geographical reach with a mean of 4.26 and standard deviation of 0.891.

5.3 Conclusion and Recommendations

The following conclusions were made based on the summary of the findings:

The study has demonstrated that the application of technology in the account opening process, truncation and cheque imaging transmission, call center, settlement of payment on a gross basis in real time, loan approval process, credit card services, and sales force automation has resulted in competitive advantage for the banks.

These advantages have been seen in the high quality customer service; personalized services; 24/7/365 availability of your resources; quickened transaction processing; visibility of the bank through search engine marketing; increased bank turnover and profitability; reduced marketing and advertising costs; and expanded geographical reach.

The following recommendations were made based on the summary and conclusion of the study: The study recommends that for banks to remain competitive, they should ensure high quality customer service; personalized services; 24/7/365 availability of your resources; quickened transaction processing; visibility of the bank through search engine marketing; increased bank turnover and profitability; reduced marketing and advertising costs; and expanded geographical reach through application of technology.

5.4 Limitations of the Study

The study's limitations included the limited time set aside for the research and the limited scope. This limitation was overcome by starting the research early in the period set aside. This ensured the maximum amount of time possible was spent in the research and last minute rush was avoided.

The findings of the research covered only commercial banks in Kenya. Kenya has many other financial institutions that are using mobile telephony to provide their services. It is not possible to tell from this study whether the same findings would apply to all the other financial institutions in Kenya. Further, the research has not dealt with commercial banks outside Kenya, for instance in the East African Community to ascertain whether the findings can still hold.

Respondents were also reluctant to offer information for fear that the information would be used against them. The researcher handled the problem by carrying an introductory letter from the university and assuring the respondents of treating any obtained information confidentially and purely for academic purposes.

5.5 Suggestions for Further Research

There is a need to answer the question of whether the findings of this research can be made universal across time in Kenya and outside Kenya. There are many financial institutions in Kenya and abroad which use mobile banking technology. This study has just covered commercial banks in Kenya. This reduces the power of universally applying the results. A research can be done to determine how mobile banking is used to enhance financial inclusion in more financial organizations and for a longer period of time to get more universally useful results.

There is also a limitations of this study which include a similar study whose objective would be to reaffirm these findings. Further research could also be done to determine other factors that result in competitive advantage for banks. Which can include the similar variables or more variables be added. This can be used to come up with more solid confirmation or reduction of error term.

There is also an opportunity for further research on availability and support of technology by banks and their stakeholders is also available. Based on this research that technology gives competitive advantage, this study would be important for the banks and stakeholders to establish whether they play their important role in supporting technology and technology-based innovations. Such research would also help policy makers evaluate existing policies on the same.

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APPENDICES

Appendix I: Introduction Letter

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS

Telephone: 020-2059162
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsity

P.O. Box 30197
Nairobi, Kenya

DATE 4/10/2017

TO WHOM IT MAY CONCERN

The bearer of this letter ... NICHOLAS JOHN KILONZI

Registration No. D61/83712/2015

is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

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

Thank you.

UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
04 OCT 2017
P.O. Box 30197 - 00100 NAIROBI

PATRICK NYABUTO
SENIOR ADMINISTRATIVE ASSISTANT
SCHOOL OF BUSINESS

Appendix II: Research Questionnaire

Instructions: Kindly complete the following questionnaire using the instructions provided for each set of question. Tick appropriately.

Confidentiality: The responses you provide will be kept strictly confidential. No reference will be made to any individual(s) or institution in the report of the study.

PART A: BACKGROUND INFORMATION

A1: Respondents Profile

1. What is your gender?

[ ] Male [ ] Female

2. In which of the following age brackets do you belong?

[ ] Below 20 years [ ] 21 – 30 years [ ] 31 – 40 years

[ ] 41 – 50 years [ ] above 50 years

3. What is your education level (state the highest level?)

[ ] Certificate [ ] Diploma

[ ] Undergraduate [ ] Post Graduate

[ ] Other

4. How many years have you worked with the bank?

[ ] Less than 1 year [ ] 1 – 3 years [ ] 4 – 7 years

[ ] 8 – 11 years [ ] Over 11 years

5. What is your career orientation?

[ ] Accounts [ ] Marketing [ ] Operations

[ ] IT Professional [ ] Other (specify)

A2: Bank Profile

6. How long has the bank been in operation in Kenya?

[ ] Less than 10 years [ ] 11 – 20 years [ ] 21 – 30 years

7. What is the ownership of the bank?

Locally owned [ ] Foreign Owned [ ] Both Local/Foreign Owned [ ]

8. Number of employees?

[ ] Less than 100 [ ] 100 – 500 [ ] 501 – 1000

[ ] 1001 – 1500 [ ] 1501 – 2000 [ ] More than 2000

9. Is there an IT Department in your bank?

Yes [ ] No [ ]

PART B: EXTENT OF INVESTMENT IN TECHNOLOGY IN YOUR BANK

10. To what extent has your bank invested in technology in each of the following aspects? Rate on a 5 – point scale, where 1 = Not at all, 2 = little extent, 3 = moderate extent, 4 = great extent and 5 = very great extent. Rate by ticking the appropriate column.

Extent Of Investment In Technology In Banks	**1**	**2**	**3**	**4**	**5**
Cost of IT (investment)					
Expenditure on development of IT					
Training cost to improve IT skill					
ATMs					
Money transfer systems					
Mobile Banking					
Tele – banking					
Internet banking – direct access to your account					

PART C: EXTENT OF APPLICATION OF TECHNOLOGY IN YOUR BANK

11. To what extent has your bank applied technology in each of the following aspects? Rate on a 5 – point scale, where 1 = Not at all, 2 = little extent, 3 = moderate extent, 4 = great extent and 5 = very great extent. Rate by ticking the appropriate column.

AREAS THAT ARE AUTOMATED	**1**	**2**	**3**	**4**	**5**
Credit card services					
Truncation and Cheque imaging transmission					
Settlement of payment on a gross basis in real time					
Account opening process					
Loan approval process					
Call Centre					
Sales Force Automation					

PART D: EXTENT OF COMPETITIVE ADVANTAGE IN YOUR BANK

12. To what extent has your bank gained competitive advantage in each of the following aspects? Rate on a 5 – point scale, where 1 = Not at all, 2 = little extent, 3 = moderate extent, 4 = great extent and 5 = very great extent. Rate by ticking the appropriate column.

	1	**2**	**3**	**4**	**5**
Expanded geographical reach					
Increased visibility of your bank through search engine marketing					
Increased your turnover and profitability					
Provided 24/7/365 availability of your services					
Reduced marketing and advertising costs					
Enabled you to collect customer data					
Reduced your operating overheads					
Quickened transaction processing					
Personalized service					
High quality customer service					

APPENDIX III: LIST OF COMMERCIAL BANKS IN KENYA

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

Source: (Central Bank of Kenya, 2016)