EFFECT OF TECHNOLOGY ADOPTION ON AGENCY BANKING AMONG COMMERCIAL BANKS IN KENYA

BY

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DECLARATION

This Research Project is my original work and has not been presented in any other University.

Signed…………………………………… Date …………………………………..

Jane Muriuki   **D61/63082/2011**

This Research project has been submitted for presentation with my approval as University Supervisor.

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DEDICATION

This research project is dedicated to my spouse Enock Katam and our daughter Brenda Katam for their motivation, encouragement and moral support throughout my education.

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ABSTRACT

Nowadays due to emerging global economy, electronic commerce and electronic business have increasingly become a necessary component of business strategy and a strong catalyst for economic development. Despite the undeniable importance of technology in banking operations, the impact is still misunderstood. Lack of access to financial services has been a significant challenge to development in Kenya's financial sector. Consequently, there is still a wide gap in access to financial services, particularly for low income earners as they are not provided with formal financial sector services following high operational costs associated with banks opening branches within their locality. Previous studies on agency banking in Kenya have not looked at how technology adoption affect agency banking.

The purpose of this study was to investigate the relationship between the use of technology adoption and agency banking of commercial banks in Kenya. This study adopted descriptive research design based on the key areas of interest. The population of interest in this study comprised of the 43 commercial banks operating in Kenya as at December 2012. From the 43 commercial banks operating in Kenya, the study used purposeful sampling to pick six commercial banks that had implemented agency banking according to the Central Bank of Kenya (2012). In this study emphasis was given to secondary data which was obtained from the financial results filled at Central Bank of Kenya and Annual Banking Survey reports. In order to test the relationship between the variables the inferential tests including the regression analysis were used.

The study concludes that generally technology has a positive influence on the agency banking in Kenya. The study also concludes that e-banking is used as a complement to, rather than a substitute for, physical branches. The study recommends that e-banking should be used as a complement to, rather than a substitute for, physical branches. The study also recommends that there is need to understand the changes that technology was causing on the banking sector in order to examine in detail how the recent and foreseeable advances in technology was affecting the various aspects of the banking sector and can affect its future evolution.

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LIST OF ABBREVIATIONS AND ACRONYMS

ATM	Automatic Teller Machine
B2C	Business-to-consumer
CBD	Commercial Business District
CBK	Central Bank of Kenya
E-Commerce	Electronic Commerce
EFT POS	Electronic Funds Transfer Point of Sale
ES	Efficiency Structure
FDC	Financial Data Capture
IB	Internet Banking
ICT	Information Communication Technology
IT	Information Technology
MB	mobile banking
M-Banking	Mobile Banking
MP	Market Power theory
RBV	Resource Based View
RMP	Relative Market Power
SCP	Structure Conduct Performance
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences

CHAPTER ONE: INTRODUCTION

1.1 Background to the Study

Technology fosters economic development and is key towards sustaining high living standards around the world. Information and communication technologies (ICT) fuel the greatest wave of technical innovation currently spreading across the globe, affecting new areas of social and economic activity. Unsurprisingly, financial businesses everywhere have been in the throes of organizational changes and innovation based on new possibilities opened up by ICT. Money, after all, is "just" information about who owes what to whom. Much innovation happens in advanced economies yet new technology has the potential to unleash radical change in developing economies (Lucas, 2005).

The world has witnessed information and technology revolution (Siami, 2006). This revolution has touched every aspect of people's life including banking. Over the years, banking has transcended from a traditional brick-and mortar model of customers queuing for services in the banks to modern day banking where banks can be reached at any point for their services. Today, banks have welcomed wireless and mobile technology into their boardroom to offer their customers the freedom to pay bills, planning payments while stuck in traffic jams. Today, more people than ever are banking on the move rather than attending bank offices.

Technology has introduced new ways of delivering banking services and products to the customers, such as ATMs, and internet banking (IB). Hence banks have found themselves at the forefront of technology adoption for the past three decades. These changes and developments in the banking industry have impacts on service quality, future of the banking activities, and consequently its continually competitive ability in the world

markets since going along with technology is one of the most important factors of economic organizations success in general and banks in particular (Siami, 2006). This motivated banks to spend more on technology and information to achieve maximum returns and attract large number of clients. This study sought to investigate the effect of technology adoption on agency banking among commercial banks in Kenya.

The use of information technology in banking operations is called electronic banking. Ovia, (2001) argue that Electronic banking is a product of e-commerce in the field of banking and financial services. In what can be describe as Business-to-consumer (B2C) domain for balance enquiry, request for cheque books, recording stop payment instruction, balance transfer instruction, account opening and other forms of traditional banking services. Banks are also offering payment services on behalf of their customer who shop in different e-shops.

1.1.1 Technology Adoption in the Banking sector

The Kenyan banking industry had been embracing new technology in order to fulfill the dreams of their customers and to create healthy competition. The new banking environment was about differentiating banking products, increased choices, security and accessibility. The ability of financial institution to deliver products and services in the most efficient and effective manner, would therefore be the key to performance and relevance (Aduda & Kingoo, 2012). The developments in information collection, storage, processing and transmission and distribution technology influenced all aspects of banking activities and was regarded as the main driving forces for the changes in banking industry. Technology influenced the banking industry, mainly in the following aspects:

Technology was influencing competition and the degree of contestability in banking; Due to the development of technology, bank's superiority in information was declining. Entry barrier had been declining, new competitors had emerged. Some financial products and services had become more transparent and as customers showed willingness to unbundle the demand for financial products and services, all this led to a more competitive environment. Due to lowered entry and exist and deconstruction, for some sub-financial markets, contestability in banking was also raised (Lucas, 2005).

Technology improved delivery of service; Technology had a major impact on the way banking and financial services were delivered. A wide range of alternative delivery mechanism became available such as internet and ATMs. These reduced the dependence on the branch network as a core delivery mechanism. With the development of technology, the financial systems were substantially over supplied with delivery system through a duplication of network; banks had to change their delivery strategy, restructure their branch network strategy, and rationalize their strategy (Amoako, 2012).

Technology was safe and accessible for users; Internet Banking gave you access to banking 24 hours a day, seven days a week. Online Banking also eliminated time and distance as barriers to banking. The use of internet banking helped to keep operating costs down for banks, resulting in cheaper transaction costs for customers. Bill payment was a service that allowed you pay your bills online whenever you wanted to and whatever account you had. You could pay almost anyone from friends to businesses and creditors. Through this feature you could schedule your payments in advance, set up recurring payments on regular bills and even view your payment history. There was no

need to waste any time or money waiting in line at the post office to get stamps, making extra trips to the mailbox and ordering cheques (Amoako, 2012).

Technology was convenient and easy; we all have needed this service at one time or another. Online banking made this feature convenient and easy. With this feature you could transfer money between your accounts. This was not just limited to your accounts within one particular banking institution but almost any banking institution that you had an account with. Electronic banking allowed you to obtain real time information about your bank accounts. This allowed you to verify whether a transaction or a cheque had cleared or whether there were any unauthorized transactions on your account (Amoako, 2012).

1.1.2 Agency Banking

Agency banking is the new innovation that banks are using to take services to the un-banked and under-banked at a cheaper rate. Agency banking was introduced during the 2009 budget and was enshrined in the Finance bill of 2009. Agency banking takes customers out of the bank halls to kiosks and villages. Investors have pumped billions into new platforms that offer agency banking services (Mulupi, 2011). Among the platforms are M-kesho and 24/7 from Equity bank,Co-op kwa jirani of Co-operative bank among others. Given that more Kenyans without bank accounts will gain access to mobile banking services, transaction fees charged to mobile banking customers have reduced. One notable feature mobile platforms share is that their agents also serve as banking agents (Mulupi, 2011).

The mobile platforms are widely expected to lead to regional and national economic growth due to the increased access to advanced financial services by those who need it the most; the unbanked and semi-banked. Since traditional barriers to commerce like access, cost and time have been eliminated; economic growth is set to hasten with independent, real-time and unencumbered access to financial services (Mulupi, 2011).

Businesses with strong cash flows have benefited from the newly-introduced agency banking. By June 2011, over 30,000 outlets around the country had been enrolled as mobile money transfer agents. These left banks with a smaller pool of businesses from which they could pick the cash-rich operations they needed to roll out the agency banking model (Kinyanjui, 2011). Many of the agencies are located in rural areas where, despite the advent of mobile phone money services, people still walk long distances to transact over-the-counter business. There is still cases of selected use even when a client has chosen to embrace the new technology, they still use some and rely on the traditional methods they are used to for some activities despite the fact that it could also be done through mobile and agency banking. This suggests apathy in technology adoption.

The advancement in Technology has played an important role in improving service delivery standards in the Banking industry. In its simplest form, Automated Teller Machines (ATMs) and deposit machines now allow consumers carry out banking transactions beyond banking hours. With online banking, individuals can check their account balances and make payments without having to go to the bank hall. This is gradually creating a cashless society where consumers no longer have to pay for all their purchases with hard cash (Amoako, 2012).

1.1.3 The banking Sector in Kenya

The banking industry in Kenya is governed by the Companies Act, the Banking Act, the Central Bank of Kenya Act and the various prudential guidelines issued by the Central Bank of Kenya (CBK). The banking sector was liberalized in 1995 and exchange controls lifted. The CBK, which falls under the Minister for Finance's docket, is responsible for formulating and implementing monetary policy and fostering the liquidity, solvency and proper functioning of the financial system. The CBK publishes information on Kenya's commercial banks and non-banking financial institutions, interest rates and other publications and guidelines (Central Bank of Kenya, 2010).

Kenya banking sector has witnessed many changes since the beginning of e-banking. Today, customers of banks have efficient, fast and convenient banking services. In line with rendering qualities and acceptable services, most banks in Kenya are investing large sum of money in information and communication Technology. While the rapid development of information technology has made some banking tasks more efficient and cheaper, technological investments are taking a larger share of bank's resources. Currently, apart from personnel costs, technology is usually the biggest item in the budget of a bank, and the fastest growing one. Another problem associated with this financial innovation plastic card fraud, particularly on lost and stolen cards and counterfeit card fraud. Banks need to manage costs and risks associated with electronic banking.

Since most banks offer comparable products and services, they continually search for a competitive advantage that will attract new customers and help them retain existing ones.

Banks therefore, must endeavor to develop innovative programs and initiatives to maintain superior customer service levels while remaining profitable guidelines (Central Bank of Kenya, 2010). Over the last few years, the Banking sector in Kenya has continued to grow in assets, deposits, profitability and products offering. The growth has been mainly underpinned by; an industry wide branch network expansion strategy both in Kenya and in the East African community region and automation of a large number of services and a move towards emphasis on the complex customer needs rather than traditional 'off-the-shelf' banking products.

Equity, Co-operative, KCB, Chase bank, Family bank and Diamond Trust bank have hired thousands of agents to mobilize deposits and ease pressure on banking halls, a model promoted by CBK to enhance financial inclusion. Chase agency banking service (Chase Popote) is a system of banking where Chase bank appoints agents to offer services like cash withdrawals and deposits on its behalf, outside its banking halls. Chase Popote is an agency banking service where the bank appoints existing businesses to offer a variety of banking services, on its behalf to its clients.

1.2 Statement of the Problem

Nowadays due to emerging global economy, electronic commerce and electronic business have increasingly become a necessary component of business strategy and a strong catalyst for economic development. The integration of ICT strategy in business has revolutionized relationships within organizations and those between and among organizations and individuals. The new information technology is becoming an important factor in the future development of financial services industry, and especially banking industry (Alipour & Mahdi, 2010). Electronic business and associated technologies

therefore continue to have a major impact on the way organizations conduct business (Troshani & Rao, 2007).

Despite the undeniable importance of technology in banking operations, the impact is still misunderstood. Previous studies like Pooja and Singh (2009) and Mwania and Muganda (2011) have produced mixed results regarding the impact of technology on banking sector operations. Pooja and Singh (2009) in their studies concluded that innovations had least impact on bank operations, while Mwania and Muganda (2011) concluded that technology had significant contribution to bank operations. It is at the center of such mixed conclusions that creates and necessitates the need to carry out a study from a Kenyan context to establish the effect of bank technologies on agency banking.

Lack of access to financial services has been a significant challenge to development in Kenya's financial sector. Consequently, there is still a wide gap in access to financial services, particularly for low income earners as they are not provided with formal financial sector services following high operational costs associated with banks opening branches within their locality (Napolotano, 2010). According to Nganga and Mwachofi (2013) despite introduction to mobile banking such as Mpesa and agency banking, most Kenyans in rural areas find full technology adoption anathema. Despite the wide array of mobile and agency banking services available, the main services offered are cash deposits and withdrawals.

Previous studies in Kenya (Aduda & Kingoo, 2012, Bloor & Gikandi, 2010 and Olweny & Shipho, 2011) concentrated on the relationship between e-banking and financial performance, adoption and effectiveness of electronic banking and effects of banking

sectoral factors on the profitability of commercial banks in Kenya. Aduda & Kingoo (2012) identified the need to understand the changes that technology was causing on the banking sector in order to examine in detail how the recent and foreseeable advances in ICT was affecting the various aspects of the banking sector and can affect its future evolution. Previous studies on agency banking in Kenya (Wambugu, 2011; Karimi, 2011 and Odhiambo, 2012) have not looked at how technology adoption affect agency banking. The purpose of this study is therefore to investigate the relationship between the use of technology adoption and agency banking of commercial banks in Kenya.

1.3 Objectives of the study

1.3.1 General objective

The main objective of the study was to investigate the effect of technology adoption on agency banking among commercial banks in Kenya.

1.3.2 Specific Objectives

The study sought to achieve the following specific objectives:

   i.   To establish the effect of ATMs on agency banking among commercial banks in Kenya

   ii.   To establish the effect of internet banking on agency banking among commercial banks in Kenya

   iii.   To establish the effect of mobile banking on agency banking among commercial banks in Kenya

iv.   To establish the effect of debits cards on agency banking among commercial banks in Kenya

1.4 Significance of the Study

The study would benefit the management of commercial banks in Kenya by helping them understand the need for agency banking. In light of the stated objectives which this study is set to achieve, the study will justify the application of information technology on banking services delivery and identified the contribution of each technology to agency banking. It will also help to find out the reasons why banks today have to forgo their former ways of operation to modern banking such as ATMS, Mobile banking, EFT POS and Internet Banking among other technologies and as such identify the problems arising from the operational systems of the commercial banks in Kenya.

The study will also benefit agency banking entrepreneurs in learning how to manage their contractual relationship with their principals who are licensed commercial banks in Kenya. This will help forester better relationship between the two parties.

It will as well contribute to existing literature by identifying the most effective technologies to be adopted and promoted in the banking sector in Kenya. The study will also be a valuable source of information to students, academic institutions, and individuals that want to know more about the relationship between the use of technology and agency banking among commercial banks in Kenya.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presented the study objectives against the background of other knowledge from other scholars and researchers. It comprised theoretical and empirical reviews and finally a conclusion.

2.2 Theoretical Review

2.2.1 Theory of Innovation

In the borderless world where boundaries are no longer relevant, where accessibility to knowledge, expertise and technology is far advanced, innovation has become a necessity rather than a luxury (Kaplan & Warren, 2007). Innovation is an important function in the entrepreneur process of wealth creation, of which according to Hodgetts and Kuratko (2004) it can be through the creation of new wealth resources or enhancement of existing resources to create wealth. Hence innovation is vital in order for a firm to sustain its performance if not increase it. Beaver (2002) states that innovation is an essential condition to economic progress and a critical element in the competitive struggle of both enterprises and nation states. According to Galloway, Liston and Temperley (2004) with globalization, many firms are forced to operate in an increasingly competitive global market place hence the need to be innovative to gain competitive advantage. Innovation is therefore, a kind of strategy for enhancing firms competitiveness (Covin, Kuratko & Morries, 2008) leading to higher productivity. There are various theories of innovation developed in order to explain firm performance namely the Schumpeterian theory of innovation, Organization theory of innovation and Environmental theory of innovation among others.

2.2.2 Schumpeterian Theory of Innovation

Schumpeter identified innovation as the critical dimension of economic change (Carroll & Pol, 2006). He argues that economic change revolves around innovation, entrepreneurial activities and market power and sought to prove that innovation-originated market power could provide better results than the invisible hand & price competition. Schumpeter argued that technological innovation often creates temporary monopolies, allowing abnormal profits that would soon be competed away by rivals and imitators. He said that these temporary monopolies were necessary to provide the incentive necessary for firms to develop new products and processes (Carroll & Pol, 2006). Schumpeter (1939) considered money to be analogous to capital, as bank deposits allow them to give credit to producers for their purchases of circulating capital goods. However, he took this idea one step further claiming credit is essentially the creation of purchasing power for the purpose of transferring it to the entrepreneur. The availability of credit allows entrepreneurs to gain access to investment goods necessary for innovation before they have acquired the normal claim to it. Entrepreneurs not only have an insatiable desire to gain profit through innovation, but they could finance new innovations through endogenous money creation (Binswanger, 1996). Schumpeter (1939) considered innovation as an endogenous process because it is not implied in, nor a mere consequence of any other process. Innovation made it possible for economic agents to obtain a surplus over costs, or entrepreneurial profit. Schumpeter(1939) claimed the resulting disequilibrium behavior forever alters and displaces the equilibrium state previously existing.

Enterprises compete with one another to gain market share and improve their ability to increase profit through the use of new technology. Schumpeter (1939) posited that bank credit is a necessary requirement for the introduction of the new radical innovations and subsequent developments within each technological revolution. Finance is an enabling agent for Schumpeter, (Kregel, 2009) cutting a path of creative destruction as the new technologies displace old and mature ones, fostering the movement of finance capital from less profitable enterprises and industries to more profitable ones. Perez (2002) identifies four distinct phases in each techno-economic paradigm: irruption, when the new technology is introduced; frenzy, or the period of intense exploration; synergy, when the technology is diffused throughout the economy; and maturity, as the diffusion process becomes complete. Both stagnation and dynamic growth appear in the irruption stage, as old technologies mature and new technologies have not diffused through the economy. During the frenzy stage, many new opportunities to apply the new technology open up, leading to the creation of new markets and the revival of old industries. Financial fragility becomes particularly acute problem during this phase of the cycle. Dynamic expansion, economies of scale and diffusion are most common during the synergy phase, when producers tend to dominate and economic growth is balanced. In the last phase complacency appears as the technology reaches maturity and diffuses through the economy.

2.2.3 Resource Based View (RBV) Theory

Proponents of the RBV argued that resources that are valuable, heterogeneous, immobile, owned exclusively by the organization, and hard to copy by competitors, were likely to provide positive outcomes, such as reduced costs or increased revenue. According to the

RBV, the relationships between resources and outcomes could be determined by causal ambiguity that represented the relative difficulty of deciphering causal links between organizational resources and outcomes. Causal ambiguity was considered the major strength of this theory because it constitutes a major barrier to imitation. Barney, Fuerst and Mata (1995) applied the resource based view to four attributes of information technology that may be sources of sustained competitive advantage; capital requirements, proprietary technology, technical IT skills, and managerial IT skills and concluded that managerial IT skills are the only ones that can provide sustainability. In the case of electronic business solutions, organizations allocate resources to acquire IT related products, assuming that investments in these resources provide economic returns to a firm. Organizational performance therefore depended on the synergy generated by the integration of organizational, business, and technological resources. Although resources by themselves could serve as the basic units of analysis, organizations created competitive advantage by assembling these resources in different and unique ways to create specific competencies. When purposively built around tacit organization specific knowledge, and embedded in organizational processes, these competencies were likely to become "ambiguous," and as a result, provide advantages that were in the form of above average economic returns (Rodriguez & Rodriguez, 2005).

The resource based view interpreted the firm as bundle of resources. Resources were usually defined broadly, for example as brand names, patents, information infrastructure, managerial skills or corporate culture. Wernerfelt (1984) introduces resources as anything which could be thought of as a strength or weakness of a given firm. Barney et al (1995) added a strategic focus when he defined resources as assets enabling a firm to conceive of

or implement strategies that improve the firm's efficiency and effectiveness. Resources as tangible and intangible assets, that enabled a firm to formulate and implement its strategy well included corporate reputations, human skills or financial endowments.

The resource based view also used the concept of organizational capabilities. Capabilities in their most basic form were thought to arise from the interaction of resources. The identification of capabilities could be conducted by examining the functional activities of the company, as they were most likely being developed in functional areas. A more dynamic concept defined organizational capabilities to be dynamic routines that governed the ability of an organization to learn, adapt, change and renew over time. Dynamic capabilities were embedded in the processes and routines of the firm and could thus neither be separated from the firm nor could they be adequately formulated. Capabilities were thus defined as combination of interacting resources. According to the framework of the resource based view several criteria were required for resources and capabilities to be the source of such advantage:Value contribution to strategy, Rareness, Inimitability, Non substitutability (Barney et al, 1995) .

The concept of IT capability was introduced by Beath, Goodhue and Ross (1996) and defined IT capability as the firm's ability to assemble, integrate and deploy IT based resources. Bharadwaj (2000) defined IT capability as the ability of a firm to mobilize and deploy IT based resources in combination with other resources and capabilities. Those IT based resources are IT enabled resources, which consist of technical and managerial IT skills; intangible IT enabled resources; such as knowledge, assets, customer orientation and synergy the sharing of resources and capabilities across organizational division. Therefore capabilities reflected the ability of these firms to combine resources to promote

superior performance. Capability were in form of competence that organization demonstrated in its capability to make use of IT tools and processes that were required to maintain market and customer information hence, IT competence was conceptualized to include three dimensions: IT operations, IT object and IT knowledge. A high level of IT experience enabled organizations to be innovative in service delivery and cost containment strategy that would enhance performance as well as meet customer requirement. Bhatt and Grover (2005) suggested IT capabilities provided the basis of gaining competitive advantage and enhancing organizational performance. Bharadwaj (2000), Floyd and Wooldridge (1990) agreed that IT capabilities were resources to facilitate an effective collection and utilization of information and suggested that IT capabilities enhanced service reliability, reduced transaction errors and increased consistency in performance. Further additions to the observations were that IT capabilities contributed to enhancing service quality through better customized or individualized services, and in creating knowledge links for identifying and sharing organizational expertise. Baily, Herbert, Quinn and Willett (1994) commented that IT capabilities, which were also known as IT competencies, improved performance through elimination of inefficiency, reduction of long term cost, improve service reliability and reduced transaction errors.

2.2.4 Environmental Theory of Innovation

This theory related innovation to the environmental factors that could trigger innovative activities of the firms (Cosh, Fu, & Hughes, 2005). According to Hodgetts & Kuratko (2002), this arose through the continual shift in the market place which caused developments in the consumer attitudes, advancement in technology, industry growth and

the like. Thus, in an increasingly turbulent environment, innovation activity would increase in order for firm to survive, while in benign environment innovation initiatives would decrease. According to Cosh et al. (2005) innovation required an organization that had flexibilities to facilitate the coordination between departments within the innovating firm and to merge change, foster new ideas and effectively commercialize the product. It provided a favorable environment for generating and fostering of new ideas.

2.2.5 Market power and Efficiency Structure Theories

Studies on the performance of banks started in the late 1980s/early 1990s with the application of two industrial organizations models: the Market Power (MP) and Efficiency Structure (ES) theories. The balanced portfolio theory also added greater insight in to the study of bank profitability. Applied in banking the Market Power hypothesis posited that the performance of banks was influenced by the market structure of the industry. There were two distinct approaches within the MP theory; the Structure-Conduct Performance (SCP) and the Relative Market Power hypothesis (RMP). According to the SCP approach, the level of concentration in the banking market gave rise to potential market power by banks, which rose their profitability. Banks in more concentrated markets were most likely to make abnormal profits by their ability to lower deposits rates and to charge higher loan rates as a results of collusive (explicit or tacit) or monopolistic reasons, than firms operating in less concentrated markets, irrespective of their efficiency (Tregenna, 2009).

Unlike the SCP, the RMP hypothesis posited that bank profitability was influenced by market share. It assumed that only large banks with differentiated products can influence

prices and increase profits. They were able to exercise market power and earn non competitive profits. The ES hypothesis, on the other hand posited that banks earned high profits because they were more efficient than others. There were also two distinct approaches within the ES; the X-efficiency and Scale-efficiency hypothesis. According to the X-efficiency approach, more efficient firms were more profitable because of their lower costs. Such firms tended to gain larger market shares, which manifested in higher levels on market concentration, but without any causal relationship from concentration to profitability (Athansasoglou, Brissimis, & Delis, 2006).The scale approach emphasized economies of scale rather than differences in management or production technology. Larger firms could obtain lower unit cost and higher profits through economies of scale. This enabled large firms to acquire market shares, which manifested in higher concentration and then profitability.

Athansasoglou et al (2006) argued that profitability was a function of internal factors that are mainly influenced by a bank's management decisions and policy objectives such as the level of liquidity, provisioning policy, capital adequacy, expense management and bank size, and the external factors related to industrial structural factors such as ownership, market concentration and stock market development and other macroeconomic factors. The above theoretical analysis showed that MP theory assumed bank profitability was a function of external market factors, while the Portfolio theory largely assumed that bank performance was influenced by internal efficiencies and managerial decisions.

2.3 Empirical Studies

A lot has been reviewed in terms of technology adoption of various commercial banks. Shirley and Sushanta (2006) studied the impact of information technology on the banking industry and analyzed both theoretically and empirically how information technology (IT related products are internet banking, electronic payments, security investments, information exchanges, Berger, 2003) related spending can affect bank profits via competition in financial services that are offered by the banks. Using a panel of 68 US banks for a period of over 20 years to estimate the impact of IT on profitability of banks, they found out that though IT might lead to cost saving, higher IT spending can create network effects lowering bank profits. They further contend that the relationship between IT expenditures and bank's financial performance is conditional to the extent of network effect. They say that if network effect is too low, IT expenditures are likely to; reduce payroll expenses, increase market share, and increase revenue and profit.

Rose (1999) described Automated teller machines (ATMs) as combining a computer terminal record keeping system and cash vault in one unit, permitting customers to enter the bank's book keeping system with a plastic card containing a Personal Identification Number (PIN) or by punching a special code number into the computer terminal linked to the bank's computerized records 24 hours a day. Once access was gained, it offered several retail banking services to customers. They were mostly located outside of banks, allowing customers to have access anytime of the day. ATMs were able to provide a wide range of services, such as making deposits, fund transfer between two accounts and bill payments. The application of information and communication technology concepts, techniques, policies and implementation strategies to banking services became a subject

of fundamental importance and concerns to all banks and indeed a prerequisite for local and global competitiveness banking. The advancement in technology played an important role in improving service delivery standards in the Banking industry. In its simplest form, Automated Teller Machines (ATMs) and deposit machines allowed consumers to carry out banking transactions beyond banking hours.

Wright (2002) mentioned that internet banking lifted the branch network as an entry barrier to the retail banking while introducing price transparency as customers could now easily compare prices online. Price transparency also brought faster commoditization of basic services and products. Wright also suggested that traditional retail banks had to develop new strategies to compete with Internet only banks. Internet only banks were pure plays with no physical "bricks and mortar" branches. However, they lacked services like cash management services and accordingly they were unexpected to dominate the retail banking sector in the long term. E-banking was driven largely by the prospects of operating costs minimization and operating revenues maximization.

The idea of internet banking according to Essinger (1999) was to give customers access to their bank accounts via a web site and to enable them to enact certain transactions on their account, given compliance with stringent security checks. Internet banking by its nature offered more convenience and flexibility to customers coupled with a virtually absolute control over their banking. Service delivery was informational (informing customers on bank's products) and transactional, conducting retail banking services as an alternative delivery conduct for retail banking, it had all the impact on productivity imputed to telephone banking and PC-banking. It was most cost efficient technological means of yielding higher productivity. It eliminated the barriers of distance, time and

provided continual productivity for the bank to beyond belief by distant customers which eliminate the need for agency banking.

Agboola (2006), in his study on Information and Communication Technology (ICT) in Banking operations in Nigeria using the nature and degree of adoption of innovative technologies; degree of utilization of the identified technologies; and the impact of the adoption of ICT devices on banks, found out that technology was the main driving force of competition in the banking industry. During his study he witnessed increase in the adoption of ATMs, EFT, smart cards, electronic home and office banking and telephone banking. He indicates that adoption of ICT improves the banks' image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services, or otherwise lose out to their competitors.

Kagan, Acharya, Rao and Kodepaka (2005) in their study on whether internet banking affects the performance of community banks found that banks that provide extensive online banking services tend to perform better. They further found out that online banking helps community banks improve their earning ability as measured by return on equity and improved asset quality by reducing the proportion of overdue and underperforming assets.

Hernando and Nieto (2006) while studying whether internet delivery channels change bank's performance, they found out that adoption of internet as a delivery channel involved gradual reduction in overhead expenses (particularly, staff, marketing and IT) which translates to an improvement in banks´ profitability. The study also indicates that internet is used as a complement to, rather than a substitute for, physical branches. The

profitability gains associated with the adoption of a transactional web site are mainly explained by a significant reduction in overhead expenses. This effect is gradual, becoming significant eighteen months after adoption and reaching a maximum generally two and a half years after adoption. Their study showed that multichannel banks present statistically significant evidence of efficiency gains, that is reduction in general expenses per unit of output. Banks would further profit from cost reductions to the extent that the Internet delivery channel functions as a substitute for traditional distribution channels.

Soroor and Toosi (2005) observed the recognition of mobile banking service in m-commerce depended upon the cost effectiveness introduced to the traditional banking system. Mobile banking offered customers reduced service charges than traditional banking charges. This was an incentive offered by the banks to use the technology and to attract customers, to increase their profit margin. Adopting technology-based innovation could be costly as institutions required a complete setup of computers, network coverage and skilled workers to start up with. Mobile technology had an advantage over other innovations as it acknowledged the existing infrastructure available in the market. Mobile network coverage provided by the telecom companies was used by the banking sector to provide their services. To cope up with the changing environment and to ensure provision of risk free technology to customers, banks invested in establishing measures to provide secure and reliable transaction of money. Investment done to ensure security had to be balanced with respect to the costs, as extra costs generally increase the cost of availing a service. The repercussions of mobile technology were not necessarily transformed into financial profits, but often passed to the customer in the form of reduction in prices.

Adoption of mobile banking enhanced the performance of a bank in terms of reduction in costs, such as transaction, administration, and promotion costs.

Aduda and Kingoo (2012) did a study on the relationship between Electronic banking and Financial performance among commercial banks in Kenya. Electronic funds transfer point of sale system (POS) gained popularity in Kenya due to increased arrangement between merchants and financial institution. EFT POS was one of e-banking system in which a customer approached a merchant establishment for purchases without carrying cash. The customer was believed to have e-cash or digital wallet from where money was deducted. It could be done by use of credit card, debit card, smart card or change cards. After purchases were made the merchant availed the knowledge about the financial strength of the customer through Financial Data Capture (FDC) machine provided by the financial institution and then deducted the cost of goods purchased. The funds were transferred instantly to the merchants' accounts. In Kenya the rapid growing of super markets and hyper markets had increasingly started accepting the use of EFT POS since the system was secure as it helped them from carrying physical cash for the sake of depositing in the banks.

Wabwoba (2012) looked at the challenges facing equity agency banking using a case of Pokot County, Kenya. From the findings 50% of clients were affected by this problem as 100% of agents asked admitted that it was a major problem. Liquidity related problems was also seen as a major problem affecting agency banking with each agent losing at least 4 clients per week due to the problem. Lack of startup capital had also locked up many potential agents from being recruited.

Maganga (2012) studied strategies adopted by the commercial banks in Kenya in implementing agency banking. The study found that banks had embraced agency banking as a way of improving services to the customers and had achieved successful implementation of agency banking in Kenya. The study established that banks built on existing networks whereby banks chose retail shops, pharmacies, and other community stores where clients were regular visitors; and built a new team of dedicated staff solely focused on monitoring and training agents. There were strategies that bank had adopted in implementing agency banking in Kenya namely: enabling environment; agency banking products and services; ICT Infrastructure; partnership management; managing liquidity; agent networks and channel management; and building the network.

Gacheri (2012) did an investigation of challenges facing agent banking implementation in Kenya. The study set to establish whether the risks associated with agency banking, Policies, procedures governing Agency banking, technological, operations and awareness were hindrances to the implementation. This study was conducted within the Nairobi Commercial Business District (CBD) and primary data collection method was used. The study targeted 6 banks, 3 banks that had implemented agent banking, Equity, Co-operative bank, and Kenya Commercial Banks and three other banks that had not implemented agent banking. Data was collected through questionnaire to the banks and secondary data was what other scholars had written on agent banking. A questionnaire was designed to capture the various variables of the study. The questions were structured as open and closed ended, where open ended allowed free responses and closed were restricted to the alternatives stated, Yes or No. This study established that stringent bank

regulation and need to maintain sound financial status limited the implementation of agent banking in Kenya.

Kithuka (2012) looked at the factors influencing growth of agency banking in Kenya: the case of Equity bank, Kwale County, Kenya. The findings revealed security influenced the growth of agency banking in Kenya, distance does not influence the frequency of customer transactions, perceived usefulness influences the growth of agency banking, financial education enhances knowledge, attitude and practice in agency banking and lack of coordination between banking agencies influence the growth of agency banking in Kenya

Waithanji (2012) looked at the impact of agent banking as a financial deepening initiative in Kenya. This study sought to identify the impact of agent banking as a financial deepening initiative in Kenya and found that with agency banking having been commissioned in Kenya in April 2010, the short span of the duration in which it had been in existence the study identified only four banks engaging in the exercise. The findings indicated that it was only 4 banks out of a possible 43 banks in Kenya that had licensed agents to operate on their behalf as agents. The low number of agent banking adoption was attributed to internal weaknesses by those banks that were reluctant to embrace agent banking especially in the area of information technology. The study established that the bank with the highest number of customers was Equity bank which had 5.3 million customers and 2,851 agents followed by Co-operative bank with 1.9 million customers and 56l agents. This indicated that agent banking had an effect on financial deepening as the higher the number of agents, the higher the number of customers.

Nganga and Mwachofi (2013) also did a study on technology adoption and the banking agency in rural Kenya. The paper looked at the ways of approaching the promotion of Mobile and Agency Banking technology adoption and its diffusion in Kenya. Technology adoption climates in developing countries are, by nature, problematic, characterized by poor business and governance conditions, low educational levels, and inappropriate infrastructure. The paper was informed by comparative survey data obtained from SMEs and Bank Agents in Karatina and Likuyani, both districts in rural set ups in Kenya. The study established that though a variety of mobile and agency banking services are on offer, only a very small proportion of customers who access it, actually use it. The paper recommended intervention addressing both internal and external factors that inhibit mobile and agency banking technology adoption to the full in rural Kenya and other similar developing countries.

2.4 Conclusion

This chapter reviewed literature relevant to the subject of effect of technology adoption on agency banking. Kenyan banks have exponentially embraced the use of ICT in their service provision through investing huge amounts of money in implementing the self and virtual banking services with the objective of improving the quality of customer service. The ability of financial institutions to deliver products and services in the most efficient and effective manner, would therefore be the key to performance and relevance. The studies reviewed mainly concentrated on strategic part of agency banking without considering its affects on agency banking.

Most of the reviewed literature is from the developed countries whose strategic approach and financial footing is different from that of Kenya. Thus, there is a literature gap on the subject matter in the Kenyan situation. This study therefore will seek to fill this gap by establishing the effect of technology adoption on agency banking among commercial banks in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter included the various stages that were followed to complete the study. It give the methodology for data collection, measurement and analysis. The chapter therefore comprises the following subsections: research design, target population, data collection procedures and data analysis.

3.2 Research Design

Orodho (2003) defined a research design as the scheme, outline or plan that was used to generate answers to research problems. This study adopted descriptive research design based on the key areas of interest. Descriptive research design helped the researcher to clearly identify and describe true characteristics of a research problem without manipulation of research variables (Mugenda & Mugenda, 2003). Orodho (2003) and Kothari (2004) describe a descriptive survey design as a design that seeks to portray accurately the characteristics of a particular individual, situation or a group. According to Polit and Beck (2003), in a descriptive study, researchers observe, count, delineate, and classify. They further describe descriptive research studies as studies that have, as their main objective, the accurate portrayal of the characteristics of persons, situations, or groups, and/or the frequency with which certain phenomena occur. Previous studies related to technology adoption in banks (Olweny and Shipho 2011; Aduda and Kingoo, 2012) have used this design.

3.3 Target Population

Accordingly Ngechu (2004), a study population is a well defined or specified set of people, group of things, households, firms, services, elements or events which are being investigated. Target population is the specific population about which information is desired (Ngechu, 2004). The population of interest in this study comprised of the 43 commercial banks operating in Kenya as at December 2012.

3.4 Sample Size

Ngechu (2004) underscores the importance of selecting a representative sample through making a sampling frame. From the 43 commercial banks operating in Kenya, the study used purposeful sampling to pick six commercial banks that had implemented agency banking according to the Central Bank of Kenya (2012). According to Oso and Onen (2005), purposive sampling starts with a purpose in mind and the sample is thus selected to include people of interest and exclude those who do not suit the purpose.

3.5 Data Collection

In this study emphasis was given to secondary data which was obtained from the financial results filled at Central Bank of Kenya and Annual Banking Survey reports. The data included the actual financial statements data covering the period between 1st June 2010 and 31st December 2012.

3.7 Data Analysis & Presentation

The study used both descriptive and inferential statistics in analyzing the data. Analysis was done with the help of Statistical package for social scientists (SPSS version 21). It was preferred because SPSS has an ability to cover a wide range of the most common statistical and graphical data analysis and is very systematic. First, data collected was cleaned, sorted and collated. Then, data was entered into the computer, after which analysis was done. Descriptive statistics such mean score, frequencies and percentages for each variable were calculated and tabulated using frequency distribution tables and graphs. In order to test the relationship between the variables the inferential tests including the regression analysis were used. Regression analysis was therefore used to determine the relationship between variables in the study. The regression equation was:

$$AB = \beta_0 + \beta_1 ATMs + \beta_2 IB + \beta_3 MB + \beta_4 EFTPOS + e$$

Where,

AB is Number of Agency banking outlets.

β_0 is a Constant.

$\beta_1, \beta_2, \beta_3$ **and** β_4 are Coefficients of determinations

ATMs is the variable depicting the number of ATMs systems installed by the banks.

IB is the variable depicting the number of customers using Internet Banking .

MB is the variable depicting the number of customers using mobile banking.

EFT POS is the variable depicting the number of debits cards issued to customers.

"e" is the stochastic disturbance error term.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the information processed from the data collected during the study on effect of technology adoption on agency banking among commercial banks in Kenya. The sample composed of six commercial banks that had implemented agency banking according to the Central Bank of Kenya (2012) for the period (2010-2012).

4.2 Regression Results

The study conducted a cross-sectional OLS multiple regression on several technology adoption facets over the period 2010-2012 and of agency banking.

4.2.1 Year 2010 Analysis and Interpretations

Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (agency banking) that is explained by all the four independent variables (ATMs, internet banking, mobile banking and EFTPOS).

Table 4. 1: Model Summary for 2010 Data

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.978[a]	.957	.872	2273.38747		
Model		Sum of Squares	df	Mean Square	F	Sig.
1 Regression		2.322E8	4	5.804E7	21.231	.023[a]
Residual		1.034E7	2	5168290.585		
Total		2.425E8	6			

Table 4. 2: Coefficients of 2010 Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	298745.589	604535.679		.494	.0170
	ATMs	360.804	421.179	8.572	.857	.0482
	IB	-.065	.080	-6.423	-.807	.0234
	MB	-.002	.006	-.099	-.261	.019
	EFT POS	56.876	92.094	1.546	.618	.0106

The data findings from 2010 market statistics were analyzed and the SPSS output presented in table 4.1 and 4.2 above. From the ANOVA statistics in table 4.1, the processed data, which are the population parameters, had a significance level of 0.023 which shows that the data is ideal for making a conclusion on the population's parameter. The F calculated at 5% Level of significance was 21.231. Since F calculated is less than the F critical (value = 19.2468), this shows that the overall model was insignificant. The coefficient table in table 4.2 above was used in coming up with the model below:

AB = 298745.589 + 360.804 ATMS - 0.065 IB - 0.002 MB + 56.876 EFTPOS

According to the model, all the variables were insignificant as their significance value was less than 0.05. However, ATMS and EFT POS were positively correlated with

agency banking while internet banking and mobile banking were negatively correlated with agency banking. From the model, taking all factors (ATMs, internet banking, mobile banking and EFTPOS) constant at zero, agency banking will be 298745.589. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in ATMs will lead to a 360.804 increase in agency banking. A unit increase in internet banking will lead to a -0.065 decrease in agency banking; a unit increase in mobile banking will lead to a -0.002 decrease in agency banking while a unit increase in EFTPOS will lead to a 56.876 increase in agency banking. This infers that ATMs contributed more to the agency banking followed by EFT POS while the internet banking and mobile banking had a negative significant effect.

4.2.2 Year 2011 Analysis and Interpretations

Table 4. 3: Model Summary for 2011 Data

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.990[a]	.981	.970	149.99711

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8004088.726	4	2001022.182	88.938	.0001[a]
	Residual	157493.941	7	22499.134		
	Total	8161582.667	11			

Table 4. 4: Coefficients for 2011 Regression Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2504.956	3011.598		.832	.0433
	ATMs	2.992	.953	.463	3.139	.0163
	IB	-5.193E-5	.000	-.115	-1.526	.0171
	MB	.0001	.000	-.088	-1.274	.0243
	EFT POS	1.584	.389	.592	4.066	.0015

The data findings for 2011 statistics were processed using SPSS and the output presented in table 4.3 and 4.4 above. According to the ANOVA table 4.3 above, the parameters predicted in the table above had a significance Level of 0.0001 which is inadequate to be used as a population parameter in predicting the effect of technology on agency banking that shows that the model was significant. The regression model drawn from table 4.4 above is presented below:

AB = 2504.956 + 2.992 ATMS - 5.193E-5 IB + 0.0001 MB + 1.584 EFTPOS

According to the table, the agency banking had a value of 2504.956 that is when the value of all the independent variables is zero. Though all the variables were significant, a unit increase in ATMs increases the agency banking by 2.992 when the internet banking, mobile banking and EFTPOS variables are held constant. A unit increase in internet

banking, holding other variables constant, decreased the agency banking by -5.193E-5. A unit increase in mobile banking, holding other variables constant, increased the agency banking by 0.0001, while an increase of 1.584 in agency banking occurred when there was a unitary increase in EFTPOS holding other independent variables constant. This shows that ATMs, mobile banking and EFTPOS had a positive relationship with the agency banking while internet banking negatively influenced the agency banking.

4.2.3 Year 2012 Analysis and Interpretations

Table 4. 5: Model Summary for 2012 Data

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.995[a]	.990	.984	164.15541

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.808E7	4	4520724.979	167.764	.0002[a]
	Residual	188628.999	7	26947.000		
	Total	1.827E7	11			

Table 4. 6: 2012 Model Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-22610.043	4844.563		-4.667	.002
	ATMs	20.709	10.075	.569	2.055	.079
	IB	3.134E-5	.000	.041	.970	.364
	MB	.003	.001	-.028	-.131	.900
	EFT POS	1.363	.543	.450	2.510	.040

From the finding of the study on the 2012 market statistics as analyzed and presented in the above table, the following regression equation was established by the study for the year 2012:

AB = -22610.043 + 20.709 ATMS + 3.134E-5 IB + 0.003 MB + 1.363 EFTPOS

From the findings of the data it can be concluded that when the value of ATMS, internet banking, mobile banking and EFTPOS were zero, agency banking was -22610.043. The table also shows that though the variables had a significant relationship. Holding internet banking, mobile banking and EFTPOS constant, an increase by one unit of ATMs increases agency banking by 20.709. When other factors are held constant, an increase in internet banking by one unit increases agency banking by 3.134E-5. If one unit of EFTPOS was increased while holding other factors constant, the agency banking would

increase by 1.363 and when other factors are held constant an increase in mobile banking by one unit increases agency banking by 0.003. This shows that the ATMs, EFTPOS, internet banking and mobile banking have a positive relationship with agency banking, although the ATMs influences agency banking positively most. Moreover, the model was arrived at a significance level of 0.0002 which means that the model is adequate in drawing a conclusion on the population parameters.

4.3 Summary and Interpretation of Findings

From the above regression models for the three years, the study found out that there were several banking technologies influencing the agency banking in Kenya, which are ATMs, internet banking, mobile banking and EFTPOS. They either influenced it positively or negatively. The study found out that the intercept varied. The highest value was 298,745.59 and the lowest was -22,610 with an average of 2.1258 for all years.

The four independent variables that were studied (ATMs, internet banking, mobile banking and EFTPOS) explain only 97.6% of agency banking as represented by the average R^2 (0.976). This therefore means the three independent variables only contribute about 97.6% of agency banking while other factors not studied in this research contributes 2.4% of the agency banking.

The study found out that the coefficients for ATMs varied in value although it was positive in all cases with an average of 128.1683333. This means that ATMs positively influenced the agency banking. The study further found out that the coefficients of the internet banking to be negative in two out of the three regression models with the average also being negative (-0.02167353). This depicts that, according to findings, internet

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banking negatively influences the agency banking. This is consistent with Wright (2002) who suggested that traditional retail banks had to develop new strategies to compete with Internet only banks. Internet only banks were pure plays with no physical "bricks and mortar" branches. However, they lacked services like cash management services and accordingly they were unexpected to dominate the retail banking sector in the long term. Essinger (1999) also indicated that internet banking eliminated the barriers of distance, time and provided continual productivity for the bank to beyond belief by distant customers which eliminate the need for agency banking.

The study found out that the coefficients for mobile banking were negative in only one case although it had positive average coefficient (0.000366667). This means that mobile banking positively influenced the agency banking. According to Nganga and Mwachofi (2013) despite introduction to mobile banking such as Mpesa and agency banking, most Kenyans in rural areas find full technology adoption anathema. Despite the wide array of mobile and agency banking services available, the main services offered are cash deposits and withdrawals.

The study also deduced that EFTPOS positively influenced agency banking as it had positive coefficients in all the cases (average = 19.941). This is in agreement with Aduda and Kingoo (2012) who posited that EFT POS was one of e-banking system in which a customer approached a merchant establishment for purchases without carrying cash. In Kenya the rapid growing of super markets and hyper markets had increasingly started accepting the use of EFT POS since the system was secure as it helped them from carrying physical cash for the sake of depositing in the banks. However, this is only

common in big towns where the supermarkets are located leaving a large majority of the rural population still in need of the agency banking.

The study concludes that generally technology has a positive influence on the agency banking in Kenya. My results are consistent with prior research by Troshani and Rao (2007) who posited that electronic business and associated technologies therefore continue to have a major impact on the way organizations conduct business. Agboola (2006) also opined that that adoption of ICT improves the banks' image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services, or otherwise lose out to their competitors.

The study deduced that although the overall relationship between technology and agency banking is positive, there are some cases showing negative relationship. Thus, the relationship between technology and agency banking remains a controversial. This is consistent with earlier studies that showed mixed results about the relationship between technology and agency banking with few predicting a negative relationship while other confirms positive relationship between technology and agency banking. Previous studies like Pooja and Singh (2009) and Mwania and Muganda (2011) have produced mixed results regarding the impact of technology on banking sector operations. Pooja and Singh (2009) in their studies concluded that innovations had least impact on bank operations, while Mwania and Muganda (2011) concluded that technology had significant contribution to bank operations.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The secondary data in this analysis covered a period of 3 years from 2010 to 2012. The population of study comprised of all commercial banks in Kenya during the study period. After the screening process, firms that were not dealing agency banking were not considered hence only six banks were included. The purpose of the study is to investigate the effect of technology adoption on agency banking among commercial banks in Kenya.

This study was conducted through the use of a descriptive design. The study used purposeful sampling to pick six commercial banks that had implemented agency banking according to the Central Bank of Kenya (2012) for the period (2010-2012) which was exposed to sensitivity analysis using OLS regression.

The study found that the regression equations for the period 2010 to 2012 related agency banking to the technology adoption. From the above regression models for the three years, the study found out that there were several banking technologies influencing the agency banking in Kenya, which are ATMs, internet banking, mobile banking and EFTPOS. They either influenced it positively or negatively. The four independent variables that were studied (ATMs, internet banking, mobile banking and EFTPOS) explain only 97.6% of agency banking as represented by the average R^2 (0.976). The study concludes that generally technology has a positive influence on the agency banking in Kenya. The study also concludes that e-banking is used as a complement to, rather than a substitute for, physical branches. The study recommends that e-banking should be used as a complement to, rather than a substitute for, physical branches. The study also

recommends that there is need to understand the changes that technology was causing on the banking sector in order to examine in detail how the recent and foreseeable advances in technology was affecting the various aspects of the banking sector and can affect its future evolution.

5.2 Conclusions

This paper examines the effect of technology adoption on agency banking among commercial banks in Kenya. The study concludes that generally technology has a positive influence on the agency banking in Kenya. The study found that banks had embraced agency banking as a way of improving services to the customers and had achieved successful implementation of agency banking in Kenya. A wide range of alternative delivery mechanism became available such as internet and ATMs. These reduced the dependence on the branch network as a core delivery mechanism. With the development of technology, the financial systems were substantially over supplied with delivery system through a duplication of network; banks had to change their delivery strategy, restructure their branch network strategy, and rationalize their strategy. The new information technology is becoming an important factor in the future development of financial services industry, and especially banking industry.

The application of information and communication technology concepts, techniques, policies and implementation strategies to banking services is a subject of fundamental importance and concerns to all banks and indeed a prerequisite for local and global competitiveness banking. The advancement in technology plays an important role in improving service delivery standards in the Banking industry. In their simplest form, e-

banking allow consumers to carry out banking transactions beyond banking hours. However, this does not seem to have a significant effect on the agency banking which mostly serve the rural poor who most of the time are illiterate and find full technology adoption anathema as their main services accessed are cash deposits and withdrawals which the agency banking provide.

The study also concludes that e-banking is used as a complement to, rather than a substitute for, physical branches. The profitability gains associated with the adoption of a transactional e-banking are mainly explained by a significant reduction in overhead expenses while agency banking has the advantage of providing the banking services to the rural areas. Banks would therefore profit from cost reductions to the extent that the e-banking channels do not function as a substitute for traditional distribution channels. This is because technology adoption climates in developing countries such as Kenya are, by nature, problematic, characterized by poor business and governance conditions, low educational levels, and inappropriate infrastructure. Further, although a variety of e-banking services are on offer, only a very small proportion of customers who access it, actually use it.

The study finally concluded that although the overall relationship between technology adoption and agency banking is strong and positive, there are some cases showing positive relationship. Thus, the relationship between technology adoption and agency banking remains a controversial. This is shows there are mixed results about the relationship between technology adoption and agency banking with both a negative relationship and a positive relationship between technology adoption and agency banking.

5.3 Recommendations for Policy and Practice

The study recommends that e-banking should be used as a complement to, rather than a substitute for, physical branches. This is because most of the people in the rural areas are not able to access the e-banking services owing to their level of technology literacy.

Since the study revealed that security influenced the growth of agency banking in Kenya and distance does not influence the frequency of customer transactions, government policy that will guide against Money laundering, fraud and Security risks posed by e-banking are inevitable. To counter the legal threat and security posed to net banking and e-commerce, the necessary legal codes backing the industry must be established; this will enhance the growth of the industry.

The study also recommends that there is need to understand the changes that technology was causing on the banking sector in order to examine in detail how the recent and foreseeable advances in technology was affecting the various aspects of the banking sector and can affect its future evolution.

Since adoption of ICT improves the banks' image and leads to a wider, faster and more efficient market, it is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services, or otherwise lose out to their competitors.

Liquidity related problems was also seen as a major problem affecting agency banking with each agent losing at least 4 clients per week due to the problem. Therefore, stringent bank regulation and need to maintain sound financial status limited the implementation of agent banking in Kenya.

The low number of agent banking adoption among commercial banks is attributed to internal weaknesses by those banks that are reluctant to embrace agent banking especially in the area of information technology. This is also occasioned by perceived usefulness which influences the growth of agency banking. The policy makers especially CBK should provide information on how the agency banking can enhance the banks operations and performance. This is because agent banking has an effect on financial deepening as the higher the number of agents, the higher the number of customers.

The study established that though a variety of mobile and agency banking services are on offer, only a very small proportion of customers who access it, actually use it. The paper recommended intervention addressing both internal and external factors that inhibit mobile and agency banking technology adoption to the full in rural Kenya and other similar developing countries.

To facilitate and improve banking technology adoption in rural Kenya and other developing countries, there is need to address the internal factors through awareness creation, training, improving organization/SME capability, enhance and assure security, reliability, confidence and improve risk taking propensity by potential adopters. Training and Manpower development is a major problem mitigating against the growth of e-commerce in the country. Government must make right IT policy by ensuring that Computer, Communication equipments and other IT infrastructures to a large extent are manufactures in the country so that our people can acquire first hand necessary skills. There is also need to address external factors through policy framework, improved ICT and Telecommunication infrastructure, integrated and persistent institutional pressure and availing requisite human and financial capital and other resources that would support

early IT adopters for the growth/diffusion of e-banking and agency banking technology adoption. Regulatory authorities like Central Bank of Kenya must stipulate standards for the banks to follow to avoid making Kenya Banking Sector a dumping ground for the outdated technological infrastructures. The banks must be focused in terms of their needs and using the right technology to achieve goals, rather, than acquiring technology of internet banking because other banks have it.

5.4 Limitations of the Study

There were challenges which were encountered during the study. Some officers from banks that participated in the study were initially reluctant to release information related to agency banking and Annual reports on e-banking making arguments that it was confidential. That reluctance delayed the completion of data collection.

Further, the model may not be reliable due to some shortcoming of the regression models. Due to the shortcomings of regression models, other models can be used to explain the various relationships between the variables.

Further, the data was tedious to collect and compute as it was in very raw form. Due to lack of standardized financial statements from various banks which made the data computation even harder.

5.5 Suggestions for Further Research

Since the study focused on the effect of technology adoption on the agency banking focusing only on the six banks that had adopted agency banking by 2012, further studies

should be done on all commercial banks to assess how technology adoption affect their operations.

This study studied was confined to commercial banks yet the current banking innovation such as electronic money is targeted to include the rural marginalized mostly served by micro finance institution in the banking net. There is need therefore to study adoption and use of ICT by Micro finance institutions, insurance companies and Saccos and how this affects their operations and performance in general.

Further studies should also be done on the challenges that affect the adoption of agency banking among commercial banks in Kenya since only six have adopted it by 2012 despite previous studies showing it is beneficial in customer acquisition.

The study also recommends that further studies should be done on the effect of other factors in the banks such as number of branches on agency banking. A similar study should also be done whereby the data collection relies on primary data i.e. in-depth questionnaires and interview guide so as to complement this study.

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APPENDICES

Appendix I: List of Commercial Banks With Agency Banking

1. Equity bank
2. Co-operative bank
3. KCB bank
4. Chase bank
5. Family bank
6. Diamond Trust bank