EFFECT OF ELECTRONIC BANKING ON FINANCIAL PERFORMANCE OF DEPOSIT TAKING MICRO-FINANCE INSTITUTIONS IN KENYA

BY

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DECLARATION

This is my own original work and has never been submitted for a degree in any other university.

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This research Project has been submitted for examination with my approval as a University supervisor.

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DEDICATION

This project is dedicated to my Loving Daughters Yvette, Hope and Natalia.

ABSTRACT

The main objective of this study was to find out the effect of electronic banking on financial performance of deposit taking microfinance institutions. Specifically, this study examined the adoption of automated teller machines, mobile banking, and the use of personal computers and how they affect the financial performance of deposit taking microfinance institutions in Kenya. Financial performance was measured using Return on Assets.

The study adopted a descriptive design where inferential statistics were used in analysing the data. The study population consisted nine registered deposit taking microfinance institutions in Kenya as at June 2013. The primary data was collected through the administration of questionnaires to the staff of these deposit taking microfinance institutions. Secondary data was collected using documentary information from the institutions annual accounts. Both descriptive (frequencies, percentages, mean and standard deviation) and inferential statistics including mean and frequencies was used and data was analysed using linear regression model.

The study found that all the deposit taking microfinance institutions had adopted e-banking technologies and that there exists a negative relationship between electronic banking and financial performance of deposit taking microfinance institutions in Kenya.

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ABBREVIATIONS

ATM	-	Automated Teller Machine
CBK	-	Central Bank of Kenya
DTMs	-	Deposit Taking Microfinance Institutions
E-Banking	-	Electronic banking
ICT	-	Information and Communication Technology
IS	-	Information Systems
IT	-	Information Technology
MFIs	-	Micro Finance Institution
PC	-	Personal Computer
PDAs	-	Personal Digital Assistants
POS	-	Point of Sale
SPSS	-	Statistical Package for Social Science
SACCOs	-	Savings and Credit Cooperative Societies
ROA	-	Return on Assets
TAM	-	Technology Adoption Model
TOE	-	Technology-Organization-Environment

CHAPTER ONE: INTRODUCTION

1.1 Background

Before the emergence of modern banking system, banking operations were done manually which led to a slowdown in settlement of transactions. This manual system involves posting transactions from one ledger to another by human beings and due to changes in technology, e-banking evolved. Even though Kenya did not embrace electronic banking early compared to developed countries, this concept has gained recognition in the microfinance industry and it is considered as a means of gaining competitive advantage (Muriuki, 2009).

With the introduction of e-banking, financial institutions are investing more on providing the customers with the new technologies such as personal computer (PC) banking, mobile banking, automated teller machines (ATM), electronic funds transfer, account to account transfer, paying bills online, online statements, credit cards among others. This mode of banking is considered as complimentary delivery channel for services rather than a substitute for the brick and mortar banking branches. It is envisaged that a host of benefits ranging from regulation, operational costs, accessibility of services will accrue to the institution and customers that adopt the technology which will in turn impact on the firm's financial performance.

The expression ‘microfinance’ most commonly denotes the offer of modest financial services to zero or low income clients (La Tore & Vento, 2006). It refers to a type of banking service that is provided to unemployed or low-income individuals or groups who would otherwise have no other means of gaining financial services. Ultimately, the goal of microfinance is to give low income people an opportunity to become self-sufficient by providing a means of saving money, borrowing money and insurance. It is not uncommon for some micro finance institutions, given their primary focus on providing small financial services to the poor, to have below-par professional management systems and information systems in place. Since microfinance institutions (MFIs) financial assets and funds are dependent on donors and these financial constraints can limit outreach activities, the quality of these institutions varies according to financial regulations in place in various countries and the specific micro finance institution. These methods include lending and liability, pre-loan savings requirements, gradually increasing loan sizes and an implicit guarantee of ready access to future loans if present loans are repaid fully and promptly. With deposit taking microfinance (DTMs) institutions positioning themselves to offer financial services to the poor and low income clients using methods developed over the last 30 years, taking little or no collateral, e-banking offers a paradigm shift where efficiency and effectiveness can be achieved (Muriuki, 2009).

1.1.1 Electronic banking

As Dabholkar, Bobbitt, & Lee (2003) indicated, the recent advances in technology have created a surge in technology-based self-service. Steven, (2002) defines

electronic banking as the use of electronic and telecommunication networks to deliver a wide range of value added products and services to bank customers. It includes delivering banking services using palm pilots, ATM, debit cards, point of sale (POS) devices and cell phones (Waterfield, 2004). Both financial institutions and customers are seeking for products that are convenient in terms of accessibility and cost and e-banking offers some of these benefits. According to Epstein (2004), the phrase e-banking refers to the process by which a customer may perform banking transactions electronically without visiting a brick and mortar institution and its logistical systems. Several terminologies refer to one or another form of electronic banking: PC banking, online banking, internet or mobile banking. However it should be noted that the terms used to describe the various types of electronic banking are used interchangeably.

According to Kalakota & Whinston (1997), the earliest example of e-banking is electronic funds transfer which allows banks to transfer funds between one another in a secure and efficient manner. E-banking has spread rapidly all over the globe with the latest being mobile phone banking where customers can perform most of the banking transactions on their mobile phones from a remote site. Several financial institutions have signed up partnerships with mobile phone operators to facilitate money transfer and other banking transactions. These services have been phenomenal success and have put the country at the global centre stage of financial inclusion, innovation and deepening. To support mobile banking, the Microfinance sector has continued to embrace the use of internet as a remote delivery channel for banking services. These services include; opening accounts, transferring funds to different accounts, online viewing of the accounts, online inquiries and requests, online salaries payments,

clearing cheques status query, online loan application, online deposit of funds as well as loan repayment and instant alerts of account or transactions status (CBK, 2011).

E-banking has the potential to revolutionize access to financial services and there is a growing consensus that e-banking offers a unique opportunity to address mainstream bank's two major barriers to serving the low income market; the need for a branch infrastructure and managing high volumes of low value transactions. In Kenya among the e-banking facilities, the ATM is the first well-known and widely adopted system that was introduced to facilitate the access of the user to his banking activities (Nyangosi, Arora, & Singh, 2009). The potential of e-banking to significantly extend the reach of financial institutions into both rural and urban areas without investing in bricks and mortar branches is widely acknowledged (Cracknell, 2004).

1.1.2 Financial Performance

Financial performance refers to measuring the results of firm's polices and operations in monetary terms. These results are reflected in the firms return on investment, return on assets and value added. It basically refers to the act of performing financial activity and to a broader sense, it refers to the degree to which financial objectives are being or has been accomplished. Therefore it is the process of measuring the results of a firm's policies and operations in monetary terms and usually measures the firm's overall financial health over a given period of time and can also be used to compare similar

firms across the same industry or to compare industries or sectors in aggregation (Noveu, 1981).

The determination of a firm's financial performance involves the analysis of financial statements. According to Noveu (1981), this type of analysis allows managers, investors, creditors, as well as potential investors and creditors, to reach conclusions about the recent and current financial status of a firm. Ratio analysis is a popular tool used by the various users of accounting information to establish the ability of the firm to service its debt and earn profits for owners. Management may use the analysis as a planning device, tool for control or means to identify weaknesses in the firm. The ratios can be classified into five groups. Liquidity ratios seek to determine if a firm can meet its current obligations as they become due. Activity ratios tell how rapidly assets flow through the firm. Profitability ratios measures performance while leverage ratios measure the extent to which the firm uses debt financing. Coverage ratios measure the ability to make or cover specific payments (Mayo, 2007). In the banking industry the parameters that indicate the banks performance include: Total assets, gross loans, deposits, profitability and liquidity ratios (CBK, 2011).

1.1.3 Electronic banking and Financial Performance

According to Sumra et al. (2011), e-banking is considered to have a substantial impact on banks performance since it has opened new horizons and scenarios for retail banking. The growth of e-banking has made institutions to automate repetitive tasks

which may result into greater efficiency and effectiveness, better time usage and enhanced controls. This has helped the institutions to control their overheads and operating costs hence may become more profitable in the future.

Aduda & Kingoo (2012**)** argue that e-banking has produced changes in the structure of bank income. As a result of increased competition that has lowered margins in lending operations (the banks' traditional business), banks have diversified their sources of income and rely increasingly on income from fees services rather than interest rate spreads. This change is also reflected in the increasing size of off-balance sheet items in the banks' financial accounts. Technology allows these same products -for example a loan to a company to be traded in capital markets (securitization) instead of remaining in the bank's balance sheet. They further noted that despite the potential benefits of Information and Communication Technology (ICT) and e-commerce, there is debate about whether and how their adoption improves bank performance.

E-Banking has also helped to reduce the institution’s paperwork and has proper documentation for their records as a whole. Banks have continued to leverage on robust ICT platforms rather than recruiting corresponding number of employees to serve the increasing number of customers hence reducing the payroll cost. This is well explained by the ratio of customer deposit accounts to employees that has increased from 60in 1996 to 474 customers in 2011 (CBK, 2011).

To the general economy, e-banking has resulted in the creation of a better enabling environment that supports growth, productivity and prosperity. In addition, as e-banking operates in an electronically controlled and thoroughly monitored environment, it can discourage illegal and illegitimate practices associated with the banking industry like money laundering, fraud and embezzlement whose occurrence can have a huge negative impact on the institution's financial performance. Kegan et al. (2005), in their research on how community banks (Microfinance institutions) performed with and without e-banking noted that online banking improves the financial performance and encouraged community banks to adopt new information technologies and offer targeted online services. Cheruiyot, (2010) indicates that Internet banks are larger banks and have better operating efficiency ratios and profitability as compared to non-Internet banks since they rely more heavily on core deposits for funding than non-internet banks do. With the falling costs of technology it is imperative that the DTMs consider e-banking as it has the ability to offer an enhanced range of services at low costs.

1.1.4 Deposit Taking Microfinance Institutions in Kenya

According to the Kenyan Microfinance Act (2006), deposit taking microfinance business is defined as the business in which the person conducting the business holds himself out as accepting deposits on a day to day basis and any other activity of the business which is financed wholly or to a material extent by lending or extending credit for the account and at the risk of the person accepting the deposit, including the

provision of short term loans to small or micro-enterprises or low income households and characterized by the use of collateral substitutes. The Act enables deposit taking microfinance institutions licensed by the Central Bank of Kenya to mobilize savings from the general public, thus promoting competition, efficiency and access. According to the Central Bank of Kenya website on Micro finance supervision, the bank expects that the microfinance industry will play a pivotal role in deepening financial markets and enhancing access to financial services and products by majority of the Kenyans.

Mokoro et al. (2010) argues that widespread experiences and research has shown the importance of savings and credit facilities for the poor hence this puts emphasis on the sound development of microfinance institutions as vital ingredients for investment, employment and economic growth. They further argue that new, innovative and pro-poor modes of financing low income households based on sound operating principles had developed over 100 organizations with seven DTMs practicing sonic form of microfinance business in Kenya.

According to CBK (2012), in Kenya, only eight institutions had been registered as deposit taking microfinance institutions by 31st December 2012. These are; Kenya Women Finance Trust DTM, Faulu Kenya DTM, SMEP DTM, Rafiki DTM, REMU DTM, Uwezo DTM, SUMAC DTM and century DTM Ltd. U & I DTM was registered in 2013. They further indicated that 3 large DTMs had a market share of 96.3%, 2 medium DTMs had 3.2% and the remaining small DTMs had a market share of 0.5% while the sector's assets increased by 6% in 2011 with profits before tax declining by 19%.

It is important to note that the Kenyan Microfinance sector has shown resiliency despite local droughts and high inflation rates that afflicted the nation in 2008 and 2009. The central bank which regulates the microfinance sector released new set of guidelines as well as its vision for microfinance in the coming years. DTMs are now allowed to contract with local agents to expand their outreach in a cost-effective way which has led to some adopting e-banking strategies to ensure that they harness the advantages of the robust innovations the sector offers. Innovative forms of microfinance and progressive government policies have helped to make Kenya's microfinance sector one of the most developed in sub-Saharan Africa. Leading contributors to this dynamic are M-Pesa's success in mobile banking, the passing of the Finance Act of 2010 allowing for agent banking and the development of effective credit bureaus throughout the country. In addition, a strong culture of savings has meant that MFIs outreach to depositors has far outweighed outreach to borrowers.

1.2 Research Problem

A fundamental assumption of most research in operations improvement and operations learning has been that technological innovation has a direct bearing on the performance improvement (Prince, 1999). However, from a Strategic management point of view, financial institutions should have effective systems in place to counter unpredictable events that can sustain their operations while minimizing the risks involved through technological innovations. Only financial institutions that are able to adapt to their changing environment and adopt new ideas and business methods have

guaranteed survival. Some of the forces of change which have impacted the performance of financial institutions mainly include technological advancements such as use of mobile phones and the internet, (Okiro & Ndungu, 2013).

Some studies in this area of e-banking have been carried out. Carlson et al. (2001) in their study on internet Banking and market developments and regulatory issues, found out that Internet banking is not having an independent impact on bank profitability. DeYoung et al. (2006), carried a study on how the internet affects output and performance at community banks. The study revealed that internet banks became more profitable (ROA and ROE) relative to their brick and mortar rivals between 1999 and 2001. Internet adoption improved bank profitability, particularly through increased revenues from deposit service charges.

Previous studies done in Kenya on e-banking have not fully focused on the area of microfinance which is meant to provide banking services to the poor. For instance, Kingoo (2011) carried out a study on the relationship between e-banking and financial performance among commercial Banks whereas Asiabugwa (2011) carried out a study on the effects of e-commerce on performance of commercial banks in Kenya. These two studies revealed that a positive relationship between performance and adoption of electronic innovation exist.

Traditional brick and mortar retail banking remains the most widespread method for conducting business in the microfinance sector in Kenya as well as any other country. However, e-banking is rapidly changing the way personal financial services are being designed and delivered. Financial institutions are trying to introduce e-banking to improve their operations and to reduce costs. Despite all their efforts aimed at developing better and easier e-banking systems, these systems remain largely unnoticed by customers, and certainly underused in spite of their availability. Therefore, there is a need to understand the effect of e-banking services especially on financial performance of DTMs. Most of the studies carried out concentrated on commercial banks and hence need to find out whether adoption of e-banking by DTMs have any effect on its financial performance. This is so because unlike other MFIs, DTMs are regulated by the Central Bank of Kenya and their operations are somehow similar to commercial banks. This issue is important because the answer holds the clue that will help the MFI industry to formulate their financial and marketing strategies to promote new forms of e-banking systems in future. Therefore the study was aimed at investigating the effect of e-banking on financial performance specifically among the DTMs in Kenya.

1.3 Research Objective

To assess the effect of electronic banking on financial performance by deposit taking microfinance institutions in Kenya.

1.4 Value of the study

The study will benefit a number of groups among them managers of DTMs who will use the study to have an insight of the benefits of e-banking and what it entails. This will in turn help them decide whether to use e-banking as a competitive tool to increase new avenues for banking operations, branch network and profitability without investing in brick and mortar. The government too will benefit from this study in the regulation of the sector. Corroborative information and data on the operations of the institutions can easily be done since the data is available. In addition, appropriate policies that promote growth of the sector can be crafted from the information contained in the research. Further the findings will help the Kenya government's development partners, Non-governmental organizations, donor communities and other stake holders to effectively target and review performance of their assistance to the microfinance sector. Knowledge in the area of electronic banking will be added as this will form a reference for future research in this area.

CHAPTER TWO: LITERATURE REVIEW

2.1 Theories that inform the Study

Main concepts and discussion of major issues relevant to this study are discussed. It is from this that the research gap was identified.

2.1.1 Innovation Diffusion Theory

Rogers (1983), explains individual's intention to adopt a technology as a modality to perform a traditional activity. The theory purports to describe the patterns of adoption, explain the mechanism, and assist in predicting whether and how a new invention will be successful. The stages through which a technological innovation passes are: knowledge (exposure to its existence, and understanding of its functions); persuasion (the forming of a favourable attitude to it); decision (commitment to its adoption); implementation (putting it to use); and confirmation (reinforcement based on positive outcomes from it).

With regard to modern banking specifically e-banking, this theory cannot be ignored. Critical factors that determine the adoption of an innovation at the general level are the following: relative advantage (the degree to which it is perceived to be better than what it supersedes); compatibility (consistency with existing values, past experiences and needs); complexity (difficulty of understanding and use); trialability (the degree to

which it can be experimented with on a limited basis**);** observability (the visibility of its results).

Different adopter categories are identified as: innovators (venturesome); early adopters (respectable); early majority (deliberate); late majority (skeptical); laggards (traditional). This study tried to compare DTMs who may be at different categories of adoption and how the adoption affects the institution's financial performance.

2.1.2 Technology, organization, and environment context

Tornatzky and Fleischer (1990) in their Technology-Organization-Environment (T-O-E) framework describe that three factors are important for any technology or innovation adoption: technological context, organizational context, and environmental context.

Technological context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm as well as the set of available technologies external to the firm (Thompson 1967, Khandwalla 1970, Hage 1980). Organizational context refers to descriptive measures about the organization such as scope, size, and managerial structure. Environmental context is the arena in which a firm conducts its business: its industry, competitors, and dealings with the government (Tornatzky & Fleischer, 1990).

2.1.3 The Technology Acceptance Model

Technology Adoption Model (Davis, 1989) and its extension has been widely recognized and used in the adoption an implementation of Information technology (IT) in the Information Systems (IS) discipline. According to this model, perceived usefulness and perceived ease of use are the two main factors determining an individual's intention to accept and use of an IS (Davis, 1989).

Perceived usefulness is defined by Davis as the degree to which a person believes that using a particular system would enhance his or her job performance (Davis, 1989). Perceived ease of use is defined as the degree to which a person believes that using a particular system would be free from effort (Davis, 1989). These two factors have been empirically justified as important factors determining the adoption and use of an IS, including the adoption of online banking (Vijayasarathy, 2004).

2.1.4 Institutional Theory

Institutional theory asserts that in societies where organizations work are guided by both rational rules and activities as originations are treated as systems. Di Maggio & Powell (1983) and Scott (2001) claim that three types of institutional pressure-coercive, normative and mimetic determine the technology adoption by individuals and firms. Coercive pressure are exerted by organizations or other bodies on social actors to adopt the prescribed attitudes, behaviors and practices as the later have

resource dependency to the former (DiMaggio & Powell, 1983). At organization level, coercive pressure may come from resource dominant organizations and regulatory bodies

Normative pressure occurs when an organization voluntarily, but unconsciously imitate the attitude, behaviours and practices of other organizations. Although this imitation is not pushed by large actors, however, social actors those who have not adopted innovation may feel discomfort when peers who they admire have adopted the same (DiMaggio & Powel, 1983). Mimetic pressures are directly associated with both voluntary and conscious imitation or copying of the practices and behaviours of competitors or successful and high status actors (DiMaggio & Powel, 1983)

2.2 Forms of electronic banking

There are various forms of e-banking implemented in the banking sector. Among the widely known are defined below:

2.2.1 Automated Teller Machine Networks

ATM are data terminals for convenient money transactions. They are actually kiosk computers with a keypad and screen (Flitch, 2000). The patron is prompted with instructions and given a choice of transactions. An optional receipt can be printed for

the patron's records. Bank access to accounts is provided through telephone networking, a host processor, and a bank computer to verify data. Using an ATM card, a debit card, or a credit card, bank patrons can electronically access their accounts and withdraw or deposit funds, make payments, or check balances. According to Flitch (2000), ATM have eliminated the need to enter a bank for basic transactions and allow access to accounts on machines located at strategic places. Financial institutions charge fees to use their ATM, making the transactions very profitable for the host banks. He further argues that the use of ATM has cut service staff in traditional banks, impacting employment in the industry. As many machines are now commercially owned and leased in public venues, a technical industry for creating, leasing, and maintaining the machines has developed.

The major indicator of e-banking is ATM banking. Cracknell (2004) argues that the significant fall in the price of ATMs, the improving communications infrastructure and the general acceptance by the customers drive the significant expansion in the ATM infrastructure. According to the Central Bank of Kenya Supervision report 2011, it was indicated that Kenya had a total number of 2,205 ATMs by end of December 20011, representing an increase of 11.4% from the year 2010.

CBK argues that this increase demonstrates initiatives by banks to increase provision of their services by adopting cost effective channels. Apart from individual bank ATMs, Kenyan banks who are members of two organizations, which provide e-banking outsourcing partnership, will access over 272 ATMs. The two organizations include Pesapoint Limited and Kenya Switch (Kenswitch).

2.2.2 Telephone and Personal Computer Banking

This is a facility that enables customers via telephone calls, find out about their position with their bankers by merely dialing the telephone numbers provided. In addition, the computers may require special codes given to the customers as a means of identification to authenticate users before information is given. This is a service introduced in the banking industry as a result of computer telephone technology being made available (Ovia, 2001).

Main facilities available include checking balances, funds transfer, downloading account transactions, credit card payment among others. Telephone and P.C banking brings the bank to the doorsteps of the customer and it does not require the customer to have premises; interactive voice response becomes regular feature of operations; text to text speech capability becomes a reality and a uniformed messaging capability become permanent feature of the bank (Shittu, 2010).

2.2.3 Mobile banking

According to wikipedia, Mobile banking (also known as M-Banking) is a term used for performing balance checks, account transactions, payments, credit applications and other banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (PDA). Mobile phone banking is the most popular option of e-banking as there has been a phenomenal expansion of the use of mobile phones and

there lies a huge opportunity to operate virtual bank accounts either through the use of menu driven systems (such as M-Pesa, Airtel money) or through sms technology which is already used by millions of people. This option has a very significant advantage because it has already been accepted and that the distribution infrastructure in form of the millions of mobile phone is already in existence (Muriuki, 2009).

According to CBK supervision annual report (2011), in the year 2011 access to financial services continued to be enhanced, spurred by increased innovation in the delivery of financial products and services throughout the country. The country experienced an increase in population accessing financial services as a result of adoption of innovations particularly the mobile money revolution. Over 18 million Kenyans were using mobile phone platforms to make payments and sent remittances.

2.3 Adoption of E-Banking in Kenya

MacDonald and Koch (2006) states that the impact of technology in banking is apparent that almost all financial products can be offered electronically and the need for a physical bank location reflects customer preference since it is not a requirement for doing business. They further argued that although the technology to go "cashless" has been available for many years, some would say we have a long way to go since paper money is still popular and accounts for less than 0.3 percent of the total value of

transactions today. E-banking is being used more to improve access to financial services.

Nyangosi et al., (2009) argues that in Kenya, majority of banks have introduced internet banking, mobile banking and other e-banking facilities to enhance delivery channels to their customers. However it is important that the introduction of these products be accompanied with programs to educate the consumer on the new and more innovative ways of conducting banking business. For example, while internet banking is fast and convenient mode of conducting banking transactions, this is yet to gain acceptance among banking consumers due to fears of apprehension in this mode of banking. Like many other developing countries, e-banking in Kenya is at its early stages although banks are now open to other channels of delivery like mobile banking. Not many banks have embraced e-banking but majority have at least one or two technology based delivery channels. The non-adoption of e-banking by banks has been attributed to impaired non-availability of infrastructure and legislation to support e-banking.

2.4 Empirical Studies

Kegan et al. (2005) in their study on internet banking and performance of community banks examined the impact of online banking applications on community banks performance in America. The study used a structural equation model to create an online banking index and an econometric model to evaluate bank performance. A survey of ten community banks was conducted. Once the pilot study was considered

acceptable, all community banks with total assets less than One billion United States Dollars operating in Iowa, Minnesota, Montana, North Dakota and South Dakota were identified and using the structural equation model to evaluate the various variables identified and used to examine whether the index explains differences in community bank performance. The results indicated that banks that provide extensive online banking services tend to perform better than those who lag behind. In addition, online banking helps community banks improve their earnings ability as measured by return on equity and improve asset quality. Since the study was conducted in a highly technologically advanced economy this study sought to find out how the counterparts in developing countries like Kenya do perform.

Aduda & Kingoo (2012) investigated the relationship between e-banking and performance of Kenyan banking systems. The study used secondary data which was collected from annual reports of the target banks and they used both descriptive and inferential statistics to analyze the data. The study revealed that there exist a positive relationship between e-banking and bank performance since e-banking has brought services closer to bank customer's hence improving banking industry performance. Since the study was confined to commercial banks that operate mostly in urban areas, it would be important to extent the study to microfinance institutions since modern innovations are aimed at marginalized areas and customers not served by the commercial banks. This study investigated whether banking services offered by in commercial banks can be adopted and work for other financial institutions like DTMs.

Al-Smadi and Al-Wabel (2011) carried out a study to examine the impact of e-banking on Jordanian banks performance for the period 2000 – 2010. Accounting data was used to measure banks performance using regression analysis. The results showed that e-banking has a significant negative impact on the banks performance since banks in Jordan depend on traditional channels to carry out their banking operations; hence the costs associated with its adoption are higher than the incremental revenues. The study was conducted in a society where confidence of e-banking is low unlike the Kenyan market where the population has embraced technology. It was therefore important to investigate whether many of the innovations in e-banking adopted in Kenyan microfinance industry has an effect on their performance.

Muriuki (2009) identified the factors that affect the adoption of e-banking by MFIs in Kenya. The objective of the study was to assess the factors that affect the adoption of e-banking by MFIs in Kenya; and to rank the importance of such factors. A descriptive research design was adopted and data collected using a questionnaire administered to each respondent. Among the factors were organizational factors, perceived technological factors, perceived external factors. Results indicate that MFIs with a strong support and commitment to e-banking from top management are more likely to adopt it. MFIs that have requisite IT and business resource (Infrastructure and skills) for e-banking adoption stands a better chance at adopting e-banking. MFIs are not exempt from technological advancement especially for fast service delivery and therefore to remain relevant and reap the benefits that come with technology including improved financial performance.

Ombati et al. (2010), tried to establish the relationship between technology and service quality in the banking industry in Kenya. The research was carried through a cross-sectional survey design which questioned respondents on e-banking services. The population of the study mainly constituted customers of banks within the central business district of Nairobi with a sample size of 120. Data was analyzed by use of frequency, percentage, means and correlation analysis. The findings revealed that there is a direct relationship between technology and service quality which can translate to performance of the bank. The different dimensions of offering banking services electronically such as security, efficiency, accurate records, convenience and accurate transactions are critical in adoption of internet banking hence need to measure the effect of adoption of e-banking on the financial performance.

Sumra et al. (2009) examined the impact of e-banking on profitability of Pakistani banks. The study was carried out by assessing the qualitative factors determining the impact of e-banking. It was descriptive and exploratory in nature and was carried out by interviewing managers of some banks in Pakistan on electronic services being provided. The study showed that e-banking has increased the profitability of banks; it has enabled banks meet their costs and earn profits even in the short span of time. The study was carried out in an environment that may be similar to the Kenyan setting, hence need to find out if adoption of e-banking especially in microfinance sector has had an impact in the Kenyan setting.

2.5 Summary of Literature Review

From the empirical review above, it is clear that there is mixed evidence on the effect of e-banking on financial performance of DTMs in Kenya. Different Institutions have measured e-banking using different parameters and the results obtained vary. With the passing of the Microfinance Act (2006), many DTMs have been established and they offer services similar to commercial banks to the marginalized customers. Many of these DTMs have adopted some form of e-banking whose success is yet to be known; hence need to carry out research and evaluate whether e-banking has helped to improve the financial performance of these institutions.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the procedures that were used in conducting the study. It sets out the various stages and phases that were followed in completing the study. It identifies the procedures and techniques that were used in the collection, processing and analysis of data. The following sub sections were included; research design, target population, sample design, data collection and data analysis.

3.2 Research Design

This study adopted a descriptive cross sectional survey. A descriptive study attempts to describe or define a subject, often by creating a profile of a group of problems, people, or events, through the collection of data and tabulation of the frequencies on research variables or their interaction as indicated by Cooper & Schindler (2003). The design best suits this study since it allows for an in-depth study of the adoption of e-banking in DTMs after being legally allowed to take deposits from the public.

3.3 Population and Sampling

The population of interest in this study consisted of all the nine (9) registered DTMs operating in Kenya as at 30th June 2013 (see appendix 2).

According to Mugenda and Mugenda (1999), when the population is less than 30, it is appropriate to carry out a survey (census). In this case all the 9 DTMs were considered.

3.4 Data Collection

This study made use of both secondary and primary data. In the case of secondary data financial reports of the DTMs that have adopted e-banking as well as information on pre adoption and post adoption of e-banking were collected. Secondary data in form of quarterly returns to Central Bank of Kenya Supervision Unit by DTMs were also used. The main tool for primary data collection was questionnaire administered through drop and pick. With the help of research objectives of the study the questionnaire was designed to collect all the data on variables to be investigated and sent to the operations and finance managers of DTMs.

3.5 Data Analysis

The Pearson Correlation as measure of association was used to examine the relationship between the electronic banking and financial performance. The study used descriptive statistics in analyzing the data. The linear regression model was used for data analysis. Descriptive statistics including cross tabulations was used to describe the characteristics of the sample data while main examination involved univariate, bivariate and multivariate level analyses using the regression model to determine the relationships between the independent variables and the dependent variable(s).

3.6 Analytical Model

Regression analysis was used to analyse the effect of e-banking on the DTMs financial performance as follows;

$PERF = \alpha+\beta_1 x_1+\beta_2 X_{2+}\beta_3 X_{3+ó}$

Where ,

PERF = Return on Assets

X1 = Number of ATMS available

X2 = Number of customers on Internet Banking platform

X3 = Variable Expenditure in ICT measured in Kenya Shillings

ó = Other control variables

B_j, j = 1,2,3 = the slope coefficients whose sign depict the relationship between return on assets as a measure of bank and electronic banking proxied by investment in electronic banking measured in Kenya Shillings, number of ATM available, number of customers on internet banking platform and Expenditure in ICT.

A negative/positive relationship is expected between electronic banking proxy measures and bank performance proxy

CHAPTER FOUR: DATA ANALYSIS RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data analysis results, interpretation of the results and discussion. Data analysis was done using SPSS with the main analysis tools being descriptive statistics (frequencies, percentages, mean and standard deviation) and regression analysis. The study sought to establish whether there exist a relationship between the financial performance and e-banking in Kenyan microfinance industry.

4.2 Response rate

The study targeted all the nine (9) licensed DTMs in Kenya. The targeted respondents were the finance managers of the respective DTMs. The table 4.1 presents the response rate.

Table 4.1: Response rate

	Target Number	**Achieved**	**Response rate (%)**
DTMs	9	9	100
Total	**9**	**9**	**100**

From table 4.1, the study achieved an overall response rate of 100%. This could be attributed to the fact that the population was small hence the researcher was able to reach out to each individual respondent at their convenient time.

4.3 Descriptive Statistics for variables

This section presents the descriptive statistics for all the variables used. Table 4.2 reveals that all the variables were on upward trend over the study period: 2008 and 2012.

Table 4.2 Presentation of Statistics of Variables

YEAR	ROA	NO OF ATMS IN USE	CUSTOMERS USING MPESA	CUSTOMERS USING INTERNET BANKING	ICT EXP(KSHS, MILLIONS)
2008	0.046	12.00	900.00	38.00	10.00
2009	0.053	20.00	9,530.00	2,855.00	22.00
2010	0.050	44.00	29,775.00	5,780.00	90.00
2011	0.052	62.00	112,851.00	42,490.00	153.00
2012	0.094	101.00	362,798.00	111,850.00	283.40

Source: Research Data

From the table above, DTMs performance was measured by return on asset while e-banking was measured by Number of ATMs accessed by customers, expenditure on ICT investments (measured in Kenya Shillings), number of customers using M-pesa service and number of customers Using Internet banking service. Return on assets was calculated by dividing DTMs' net profit after taxation by the total assets held by the DTMs over the study period. All the variables increased steadily over the years.

Table 4.3 Correlations

		ROA	NO OF ATMS IN USE	CUSTOMERS USING MPESA	CUSTOMERS USING INTERNET BANKING	ICT EXP
Pearson Correlation	ROA	1.000	.864	.965	.944	.882
	NO OF ATMS IN USE	.864	1.000	.945	.950	.998
	CUSTOMERS USING MPESA	.965	.945	1.000	.996	.963
	CUSTOMERS USING INTERNET BANKING	.944	.950	.996	1.000	.967
	ICT EXP	.882	.998	.963	.967	1.000

Pearson correlation is used to evaluate the relationship between the variables. The correlation matrix is an important indicator that tests the linear relationship, between the variables. The matrix also helps to determine the strength of the variables in the model, that is, which variable best explains the relationship between financial performance and e-banking. This is important and helps in deciding which variable(s) to drop from the equation. Table 4.3 presents the correlation matrix of the variables in levels. The table shows that there is positive correlation between return on assets and expenditure on ICT investments (In millions Kenya shillings), number of customers using M-pesa service and number of customers Using Internet banking service meaning that the ROA is positively correlated with all the independent variable on the equation. The colleration strength is largely positive on all the variables.

4.4 Regression Analysis

In order to establish the relationships and effects of e-banking on DTMs financial performance, a regression analysis was conducted. Investments in ICT, number of ATMS used by the customers, Number of customers using Mpesa service and number of customers using the internet banking platform and returns on assets were used as proxy for financial performance.

Table 4.4 Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.046	.003		13.736	.001	.035	.057					
	CUSTOMERS USING MPESA	1.249E-007	.000	.965	6.350	.008	.000	.000	.965	.965	.965	1.000	1.000

a. Dependent Variable: ROA

Excluded Variables a

Model	Beta In	T	Sig.	Partial Correlation	Collinearity Statistics		
					Tolerance	VIF	Minimum Tolerance
2. NO OF ATMS IN USE	-.451[b]	-.951	.442	-.558	.106	9.417	.106
3. CUSTOMERS USING INTERNET BANKING	-2.398[b]	-1.765	.220	-.780	.007	136.301	.007
4.ICT EXP	-.639[b]	-1.229	.344	-.656	.073	13.694	.073

a. Dependent Variable: ROA

b. Predictors in the Model: (Constant), CUSTOMERS USING MPESA, NO OF ATMS IN USE, CUSTOMERS USING INTERNET BANKING, ICT EXP

Table 4.5 below summarizes regression results. As indicated in the regression statistics R-squared was 0.931. This means that 93% variations from the expected and actual output (dependent variable: Financial performance) are explained by the independent variable (e-banking). This indicates good fit of the regression equation used. Further Analysis of variance shows that f-calculated is greater that f – critical (40.319>0.008). This implies that the regression equation was well specified. Thus, this is a good reflection of the true position that financial performance can be explained by investment in ICT, number of ATM used by the customers, Number of customers using M-pesa service and number of customers using the internet banking platform. Co-efficient of the regression shows that there is relationship between performance of the bank and e-banking.

Estimated Equation:

$PERF = 0.046-0.451X_1-2.398X_2-0.639X_3$

Where ,

PERF = Return on Assets

X1 = Number of ATMS available

X2 = Number of customers on Internet Banking platform

X3 = Expenditure in ICT

The above shows that the Number of ATM, number of customers on internet banking and expenditure on ICT have a negative relationship with the financial performance of the DTMs. Since the t values of constant, and the coefficients of x_1, x_2, and x_3 are < 0.05 then they are significant. In addition, since F is significant then the whole model is significant

Table 4.5 Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.965[a]	.931	.908	.005970	.931	40.319	1	3	.008	2.397

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter is a synthesis of the entire study. It presents a summary of the research findings, conclusions and recommendations. The chapter is organized as follows: first it presents a summary of the findings presented according to the research objectives. This is followed by conclusions and recommendations.

5.2 Summary of findings

The result reveals that the coefficient Number of ATM and number of customers on internet banking and expenditure on ICT have a negative relationship with the financial performance of the DTMs. This indicates that number of customers on internet banking has a negative relationship with financial performance of DTMs at 1% level, which is not in line with theory as reflecting financial innovation in the banking development. An increase in number of customers on internet banking by just 1 customer will lead to the decrease in profitability by Kenya shillings 2.398. This is not expected. This shows that number of customers on internet banking does not have a strong influence on the structure and the activities of the DTMs; this allows transactions to be conducted more efficiently, but from the analysis it means that technology does not assist DTMs to increase their profitability although e-banking has produced changes in the structure of income. This has resulted to increased

competition that has lowered margins in DTMs. Due to the fact that the DTMs now rely on deposits to make more money and lend the rest then e-banking should come in handy in expansion of the solutions and increasing the revenue base as more customers will be able to access services at different points and at the same time charge them for their use. This is the case as a 1% increase in the number of ATMs(1 additional ATM) will lead to a decrease of Kshs.451,000 on the DTMS profitability.

The Challenge has been that the DTMs have been slow in adapting technology and as such this has had an effect on their revenue streams. The advantages of such solutions are best described as; first to the consumers, they may adopt this new payment instrument because of its greater convenience. For the instrument to gain acceptance, it should have some of the following characteristics: anonymity, security (reliable authentication procedures, or solutions to compensate users in case of loss, theft or malfunction), liquidity (subject to wide acceptability), low transaction costs (from paper handling and clearing), speed (time saving in transactions, faster balance updating). Secondly to the DTMs more revenue streams can be experienced as they will be able to charge their customers on more items rather than the common uses.

5.3 Conclusions

The study was guided by the objective; to assess the effect of e-banking on financial performance by deposit taking microfinance institutions in Kenya. The results indicated that DTMs performance as measured by ROA is explained by investment in ICT and internet banking. This indicates that there exists a negative relationship between e-banking and financial performance.

Based on the summary of major findings, the following conclusions are drawn: the adoption of e-banking by DTMs is increasing and many of them are embracing the technology; e-banking which affects negatively the returns on assets. In addition though e-banking has enhanced outreach, the DTMs need to evaluate whether the investment they are making have any impact on profitability.

5.4 Recommendations

From the conclusions above, the following recommendations were made: First, DTMs should enhance customer awareness of the entire suite of e-banking services as well as security measures in place. This can be achieved through comprehensive advertising that utilizes various media to reach out to customers. Secondly, umbrella associations like the Association of Microfinance Institutions and related government agencies like the central bank should come out and reassure the public on the safety of e-banking. This could also be achieved through advertising and workshops.

5.5 Recommendations for further study

Since the present study was only based on DTMs, future studies should seek to improve on the findings of this study by expanding the population to include other MFIs like SACCOs. These institutions are involved in bringing financial services to the poor or marginalized areas and the idea of a virtual branch would be an area of interest to other researchers. Additionally, future studies should be focused on factors

affecting investment strategies in ICT by DTMs. This is so because even though the DTMs continue investing in ICT, its impact is negative. Further studies can also be carried using other measures of organizational performance such as operational performance which would be more linked with e-banking.

5.6 Limitations of the Study

In undertaking this study a number of challenges were faced. First the DTMs licensed by Central Bank of Kenya are few and they have been in operation for a few years hence the cumulative figures is for different number of institutions. Secondly there was bureaucracy in obtaining approval to respond to questionnaires with most institutions insisting that permission be sought from the chief executive officer. This led to delays in obtaining the required responses for data analysis in time.

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APPENDIX I:

QUESTIONAIRE

This questionnaire is meant to collect information on the effects of e-banking on organizational performance of Deposit taking Micro-finance institutions in Kenya. E-banking has been defined as the process by which a customer may perform banking transactions electronically without visiting a brick and mortar institution and its logistical systems. This information is being sought solely for academic purposes and will be treated with strict confidence. Kindly answer the questions by writing a brief statement or ticking the boxes provided as will be applicable.

PART A: BACKGROUND INFORMATION

1. Name of the DTM ……..
2. When was the DTM registered? ……

3. Does your DTM offer automated (electronic) banking services to clients?

   Yes ☐

   No ☐

4. If yes, what was the reason for adopting e-banking by your institution?

Reason to adopt e-banking	I Strongly agree	I agree	Not Sure	I disagree	I strongly disagree
Reduce Costs					
Increase Outreach					
Competitive Advantage					
Increased profitability					
To conform with market leaders/Industry					

5. In your opinion, has the risk of adopting e-banking contributed to major risks to your DTM?

I strongly agree ☐

I strongly agree ☐

I agree ☐

Not Sure ☐

I disagree ☐

I strongly disagree ☐

6. In your own opinion, what is the way forward in terms of improving performance related to e-banking?

……

……

7. In your own opinion, do you think the adoption of e-banking is the future of DTMs in Kenya?

Yes ☐

No ☐

Explain

……

……

……

8. Does your institution provide ATM services

Yes ☐

No ☐

9. If yes please indicate the number of ATMs installed by the DTM as below.

PERIOD	2008	2009	2010	2011	2012
No.					

10. Is your organization using any Mobile banking applications such as MPESA and mobile banking services

Yes ☐

No ☐

11. If yes please indicate the number of customers using the service.

PERIOD	2008	2009	2010	2011	2012
No.					

12. Is your organization providing internet banking to its clients?

Yes ☐

No ☐

13. If yes please indicate the number of customers using the service.

PERIOD	2008	2009	2010	2011	2012
No.					

14. Please indicate the total assets of the DTM as at reporting quarter.

PERIOD	2008	2009	2010	2011	2012
Amount(Kshs.)					

15. Please indicate net profit of the DTM for the past 5 years or since registration

PERIOD	2008	2009	2010	2011	2012
Amount (Kshs.)					

16. Please indicate the expenditure on ICT infrastructure (e-banking) for the past years

Year	Investment in Kshs
2008	
2009	
2010	
2011	
2012	

THANK YOU

APPENDIX 2:

LIST OF DTMS IN KENYA

1	Faulu Kenya DTM Limited
2	Kenya Women Finance Trust DTM Limited
3	SMEP DTM Limited
4	Remu DTM Limited
5	Rafiki DTM Ltd
6	Uwezo DTM Limited
7	Century DTM Limited
8	Sumac DTM Limited
9	U & I DTM Limited