

THE RELATIONSHIP BETWEEN MOBILE PHONE BANKING AND FINANCIAL DEEPENING OF COMMERCIAL BANKS IN KENYA

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Abstract

The Banking industry of the 21st century operates in a complex and competitive environment characterized by these changing technological advancement whose impact has been evident in changes in the way financial services are delivered to customers. There has been a significant increase in the number of alternative channels available for the delivery of financial services which include e-banking products such as Internet banking, mobile banking and various Automated Teller Machine (ATM) products. The specific objective was to determine the relationship between mobile phone banking and financial deepening of commercial banks in Kenya. The theory that underpin the study was Innovation Diffusion Theory. Study used descriptive cross-sectional design. The target population for this study was all the 41 commercial banks operating in Kenya. Secondary data was collected from the commercial banks financial innovations reports and primary data was collected using semi-structured questionnaire. The data obtained was analyzed using descriptive statistics (mean, standard deviation, skewness and kurtosis). Regression analysis (simple regression analysis, multiple regression analysis and stepwise regression analysis) and Pearson's Product Moment Correlation analysis was used to establish the nature and magnitude of the relationships

between the variables of the study and to test the hypothesized relationships. It was established that there is a statistically significant relationship between financial innovations adoption and financial deepening of commercial banks in Kenya. The study thus recommends that government must ensure that there are better policies to manage financial innovations adoption which has potential to be a very high volume financial transaction platform. Banks must come up with deliberate policies that allow them to be intermediaries or agents for the non-bank led product which has deeper access to people in order to lubricate the cash constraints and make the product more convenient.

Keywords: Financial deepening, financial innovation, profitability, financial performance

INTRODUCTION

The business environment is extremely dynamic and experience rapid changes as a result of technological improvement, increased awareness and demands that banks serve their customers electronically. The banking industry globally has undergone a substantial change over the years. Banks have traditionally been in the forefront of harnessing technology to improve their products and services (Adewoye, 2013). The Banking industry of the 21st century operates in a complex and competitive environment characterized by these changing conditions and highly unpredictable economic climate. The impact has been evident in changes in the way financial services are delivered to customers. While the traditional functions performed by banks have remained relatively unchanged over the past few decades, the structure of the industry has witnessed dramatic change (Aker, 2010).

Over the past decade, there has been a significant increase in the number of alternative channels available for the delivery of financial services. Traditional delivery methods have given way to new delivery technologies which include e-banking products such as Internet banking, mobile banking and various Automated Teller Machine (ATM) products (Castillo, 2009). Innovations in the banking industry have changed retail banking as far as the delivery of financial services is concerned. Collaborating with hardware, software and telecommunication companies, banks are introducing new ways for consumers to access their account balances, transfer funds, pay bills, and buy goods and services without using cash, cheques or leaving home (CBK, 2014).

Innovation is defined as the introduction of a new product to a market or the production of an existing one in a new manner. Financial innovation is primarily a product and organizational innovation which allows cost reduction for banks and/or a service improvement

for the industry as a whole. Financial innovations have been used by banks as formidable strategic variables to outstrip any form of competition thus becoming an effective means by which banks can improve their performance while simultaneously being able to maintain their effectiveness in the market (Chang & Dutta, 2012). Financial innovation refers to a wide range of changes and developments affecting financial markets, introduction of new financial instruments, deepening of financial markets and introduction of new products and procedures (Cracknell, 2012).

Financial Innovations

According to Corrocher, (2006) innovations in Information Communication and Technology (ICT) have revolutionised the financial sector resulting in novel delivery channels for financial products and services such as Automated Teller Machines (ATMs), mobile phone banking, online banking, and Agency banking. These developments leveraged on ICT are termed as electronic banking (ebanking) which is a sub-component of electronic commerce (E-commerce). E-banking has been very instrumental in improving the quality of service and financial performance of banks. Branchless banking, the use of alternative delivery channels such as mobile phone banking and agent banking, is becoming increasingly popular among commercial banks in Kenya and in other developing countries (Kithuka, 2012). It is believed to reach the low income and rural individuals as well as making these individuals better off.

The Kenya financial sector has undergone tremendous changes against the background of general trend in globalization, development of the internet and the resulting explosion of e-commerce. Registrations have been enacted to provide a framework and guidelines to enhance adoption of financial innovations in Kenya (Mwangi, 2013). The National Payments System Act of 2011 was passed with the aim of bringing all payment service providers within a single regulatory framework under the CBK including mobile phone money transfer service providers. In 2010, the agency banking guidelines were issued and in the same year, CBK started licensing deposit taking micro-finance institutions. The most notable innovation in the financial sector in Kenya includes the Automated Teller Machines (ATMs) which have become a significant feature in the banking sector. The number of ATMs has been steadily increasing since Standard Chartered Bank introduced the first ATM in Kenya 1989. By the year 2000, there were about 100 ATMs and by December, 2012 there were 2,381 ATMs spread all over the country (Okoro, 2014).

The value and amount transacted through the ATMs has steadily increased as more people adopt their use, since they are more accessible and more cost effective than visiting a physical bank. Mobile phone money transfer services were first introduced by Safaricom –

Mpesa in 2007 have experienced tremendous growth in Kenya. This notable innovation in Kenya's financial system has provided greater access and increased convenience to many low-income households and microenterprises in Kenya (Ngugi, Amanja and Maana, 2009). The money transfer services are available to millions of previously underserved people, allowing them to safely send money and pay bills without having to rely exclusively on cash. The phenomenal growth in the transaction volumes and values since the rollout underlines the popularity and use of mobile money transfer platforms.

Mobile money systems consist of electronic money accounts that can be accessed via mobile phone. There are currently five mobile money companies in Kenya, four run by mobile phone operators. Safaricom's M-PESA was introduced in March 2007; Zain's-Zap was initiated in January, 2010 (now Airtel money); YuCash, was started in December, 2009 by Essar; and Orange Money (Iko Pesa) was launched in November, 2010 by Telkom Kenya. Tangaza mobile money launched in January, 2011 is a mobile money transfer not run by a mobile phone company. One can have an account linked to SIM cards for any mobile phone service provider to allow access to the Tangaza money account via the mobile phone. In view of their depth and outreach, mobile payment platforms have become an integral part of the national financial payments system as their scope in terms of the number of transactions is wider than that of traditional channels such as banks. The success in outreach of the mobile money transfer model is attributed to a large network of agents who have increased the access points for financial service. By the end of 2012, Kenya had over 20 million mobile money subscribers and well over 77,000 agents across the country. M-PESA is by far the largest system accounting for more than 90% of mobile money subscriptions. By December 2012, the value of person-to-person transactions alone was about Kshs 150 billion per month and the number of mobile money customers almost 20 million, which means more than 2 out of every 3 Kenyan adults have access to mobile money.

Statement of the Problem Statement

The banking sector faces strong competition and actors are now realizing the benefits of adopting new ways of delivering banking to low income and rural individuals (FSD, 2011, 2012). Financial innovations have shown significant growth in the banking industry in Kenya (CBK annual report, 2015). For instance data from Central Bank of Kenya (2013) indicate that, the number of automated teller machines grew from 166 in 2001 to 2091 in 2010, while mobile phone banking transactions increased from 48,000 per annum in 2007 to over 250,000 transactions per annum in 2010. Consequently, the banking sector productivity score continued to improve where the staff to customers' ratio was 1:444 in June 2011 compared to 1:60 in

1999. Total assets increased from Ksh. 387,371 million in December 1999 to Ksh. 1.9 trillion in June 2011 while customer deposits from Ksh. 235 billion. The study of the financial innovations adoption and financial deepening was chosen because as noted by CBK (2016), banks in Kenya are now facing high operational costs, management inefficiencies and liquidity difficulties which have led to the wave of mergers, acquisitions and collapse of banks witnessed recently in Kenya including Imperial bank, Chase bank, Dubai bank among others thus making a wakeup call to the Central Bank of Kenya to strengthen its bank supervision arm (CBK, 2016).

Previous studies have produced mixed and inconclusive results regarding the impact of financial innovations on banking sector. Gennaioli, Shleifer and Vishny (2012) did a study on Neglected Risks, Financial Innovation and Financial Fragility found that the benefits of financial innovation are: avoiding regulations and reducing transaction costs and therefore making capital intermediation more efficient and cheaper for clients. Lerner and Tufano (2011) in their study on consequences of financial innovations contend that existing empirical evidence and conceptual frameworks can tell more about financial innovation, but there are substantial unanswered questions in the areas of social welfare impact of financial innovations, impact of innovations on financial deepening and a lot of financial innovations research is mainly on case studies.

In Kenyan context Ngumi (2014) on effect of bank innovations on financial performance of commercial banks in Kenya found that banks profitability have significantly increased as a result of innovations adopted. Kenyora (2013) studying effect of Financial Innovations on Financial Deepening in Kenya found that financial innovation has an insignificant positive impact on financial deepening. Both mobile money innovations and mobile banking have insignificant effects on financial deepening in Kenya. Mwangi (2013) focused on the effects of bank innovations on financial performance of commercial banks in Kenya. However the study only focused on mobile phone banking, ATM banking and online banking but failed to look at agency banking which is a key component of the bank innovations today. The studies above presents knowledge gaps to be filled. First, the reviewed studies provided mixed conclusions on the relationship between financial innovations adoption and financial deepening with some concluding positive, some negative and others no relationship. Secondly, the banking industry in Kenya is knowledge intensive since it deals with financial services in supporting the country's investment and currency circulation and yet from empirical review it has not received any empirical study in the area of finance specifically how financial innovations adoption is managed to enhance financial deepening. Additionally, there exists limited statistics and literature locally, on the levels of adoption of financial innovations and their effectiveness within the banking industry. Also, most of the studies used different research designs with some basing on empirical literature review to come up with conclusions as opposed to the current study which

will apply both primary and secondary data to measure the interrelationships among the study variables. In addition, this study will use hierarchical regression analysis equations to examine the moderating effects of bank size on the relationship between financial innovations adoption and financial deepening of commercial banks in Kenya. It is therefore from the established knowledge gaps that inform the need to carry out a study on the relationship between financial innovations adoption on financial deepening of commercial banks in Kenya.

Objective of the Study

To determine the relationship between mobile phone banking and financial deepening of commercial banks in Kenya

Hypothesis of the Study

H0: Mobile phone banking has no significant influence on the performance deepening of commercial banks in Kenya

LITERATURE REVIEW

Literature review was made up of a theoretical and empirical reviews based on the objectives of the study as explained.

Innovation Diffusion Theory

This theory was postulated by Rogers, (1962). It attempts to explain and describe the mechanisms of how new inventions in this case internet banking is adopted and becomes successful. Mahajan and Peterson (2010) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. According to Shy (1997), diffusion theory posits five characteristics of innovations that affect their diffusion: relative advantage (the extent to which a technology offers improvements over currently available tools), compatibility (its consistency with social practices and norms among its users), complexity (its ease of use or learning), trial ability (the opportunity to try an innovation before committing to use it), and observability (the extent to which the technology's outputs and its gains are clear to see) (Frame & Scott, 2001). Diffusion studies have demonstrated that innovations affording advantages, compatibility with existing practices and beliefs, low complexity, potential trial ability, and observability, will be more extensively and rapidly diffused than an innovation with the cluster of opposite characteristics (Hirtle, 2005).

Specifically, the theory begins to describe the innovation decision process within organizations, but not to the level of addressing whether and how the characteristics of an innovation interact to affect its adoption within organizations, or whether organizational type, size, or industry affect adoption. In addition, while there is an innovation decision process described for individuals and within organizations, there is no description of how the variables interact when innovations are diffused across organizations. If an organization in Kenya observes the benefits of mobile and internet banking they will adopt these innovations given other factors such as the availability of the required tools. Adoption of such innovations will be faster in organizations that have internet access and information technology departments than in organizations without (Penalver, 2007).

Financial Deepening and Financial Performance of Commercial Banks

Several studies have been done on financial deepening of commercial banks in both global and local context. For instance Gennaioli, Shleifer and Vishny (2012) studied on Neglected Risks, Financial Innovation and Financial Fragility in Spain and concluded that financial deepening results to efficient and cheaper capital. Further Lerner and Tufano (2011) in their study on consequences of financial innovations in UK concluded that financial innovations results to widening of financial markets thus reaping benefits such as increased profits and banks brand leading to customer's loyalty.

Nguena and Abimbola (2013) investigated the implication of financial deepening dynamics for financial policy coordination in the West African Economic and Monetary Union sub-region (WAEMU). They adopted a hypothetical-deductive theoretical approach and an empirical investigation in both static and dynamic panel data econometrics. The study recommended the implementation of a financial policy directed at increasing the level of savings rate, GDP per capita growth rate and density. It also recommended the reduction of the level of reserves in the sub-region. Hartmann et al. (2007) show that financial deepening in Eastern European countries has led to faster capital reallocation; they conclude that deeper credit markets enhance capital reallocation by contributing to an increase in economic productivity growth.

Locally Ngumi (2014) studied how bank innovations affect financial performance of commercial banks in Kenya and concluded a significant increase in banks profitability. Ndege (2012) an abundant literature has also produced convincing evidence for the existence of a positive link between financial deepening and economic growth by increasing economic efficiency, investment and growth. The relationship between financial intermediation and growth has been studied through many cross-country studies, at the firm and industry levels. Further Kenyuru (2013) studying effect of Financial Innovations on Financial Deepening in Kenya and

found an insignificant but positive influence mobile money innovations and mobile banking on financial deepening. Mwangi (2013) also focused on the effects of bank innovations on financial performance of commercial banks in Kenya.

RESEARCH METHODOLOGY

Research design is the blueprint used to guide a research study to ensure that it addresses the research problem. The research design that was used is descriptive cross-sectional design (Nachmias & Nachmias, 2004). A descriptive study involves description of phenomena or characteristics associated with a subject population (the who, what, when, where, and how of a topic).

Cross-sectional studies are carried out once and represent a snapshot at one point in time (Cooper and Schindler, 2008). The study seeks to explain the relative influence of financial innovations adoption on financial deepening of commercial banks. The study therefore employed a descriptive cross-section research design, which involves the collection of data to assess the hypothesized relationship among variables. Descriptive design helps to answer questions concerning the current status of the subjects under study (Mugenda and Mugenda, 2003) while cross-sectional survey means that elements are measured at a single point in time and that the study made use of the entire population as opposed to a sample. A cross-sectional descriptive survey was used to describe characteristics or features and to analyze their frequency, their distribution and observable phenomena. Nachmias and Nachmias (2004) contend that cross sectional studies help a researcher to establish whether significant associations among variables exist at some point in time.

A research philosophy is the founding principle on how data about a phenomenon is gathered, analyzed and used. At the heart of research philosophies lies a positivist and phenomenology philosophy. Positivism presumes that the social world exists objectively and externally and that knowledge is valid only if it is based on independent observations with the outcomes being generalisable and replicable (Ravitch & Riggan, 2012). Phenomenology on the other hand holds that meanings on reality and phenomena are constructed and reconstructed through qualitative approaches. The study at hand was based on a positivist philosophy. According to Saunders et al, (2007) This kind of philosophy is quantitative as opposed to phenomenology which is basically a qualitative approach and also the positivist orientation is guided on the philosophy of one realism existing though as a result of limitations of humanity it may be known imperfectly and the realism within the context of probability can be discovered by researchers (Ravitch & Riggan, 2012). It allows researchers to ask more diverse and meaningful questions about entities, events, phenomena, processes and people.

The target population for this study was all the 41 commercial banks operating in Kenya. As at December 2016, the banking sector comprised of the 41 banking institutions (40 commercial banks and 1 mortgage finance company - MFC). Out of the 41 banking institutions, 30 locally owned banks comprise 3 with public shareholding and 26 privately owned while 13 are foreign owned. The foreign owned financial institutions comprise of 9 locally incorporated foreign banks and 4 branches of foreign incorporated banks. The 41 registered commercial banks consist of 11 large banks which are listed on NSE and, 20 small and 15 medium banks.

The sampling frame for this study consisted of all the licensed commercial banks and mortgage finance institutions in operation in Kenya as at December, 2016 as they appear in the Central Bank of Kenya database. The study opted to undertake a census because of the small number of commercial banks in Kenya since it is possible to collect data from all the banks. However purposive sampling procedure was applied to identify the sample units that have adopted financial innovations under the study objectives. This is often accomplished by applying expert knowledge of the population to select in a non-random manner a sample of elements that represents a cross-section of the population. Burns and Grove (2003) in their study emphasize that purposeful sampling method enable the researcher to select specific subjects who will provide the most extensive information about the phenomenon being studied.

This study employed the positivist philosophy drawn from the natural sciences was applied. The philosophy comprises of the research hypothesis test. The hypothesis is developed from the theories and it is deductive. The testing was done through the observation and the measurement of the social realities (Saunders et al., 2009). Positivism is founded and has a foundation build on values of reason, truth and validity besides being based on purely on data that is collected and measured in an empirical manner through use of quantitative and qualitative methods respectively (Wooldridge, 2012).

Beck (2003) describes that a research design is a plan that has details on how to find answers of the research objectives and research hypothesis respectively besides addressing any other challenges that were encountered during the study. Lavrakas (2008) notes that a research design is usually made up of the research structure, study frame work besides a study blueprint that guides the formulation of the research at different stages, as from the hypotheses up to findings and conclusion before a report is made. Therefore what comes out clear is that a good research design is logical in nature and follows a particular sequence when conducting data collection and data analysis so as to ensure that proper procedure is followed (Kothari, 2004). Descriptive research design is adopted when describing the given situation a phenomena, it takes into consideration current believes customs and also traditions in data collection (Baumgartner, Strong and Hensley 2002). Further, descriptive research also includes

surveys and different enquiries with the main reason being that while conducting a descriptive cross sectional research to the research to describe the state current state of affairs objectively (Kothari, 2004).

Data was obtained from both secondary and primary sources. The data was collected from the commercial banks financial innovations reports. The banking innovations reports are an internal publication that publishes the nature of performance of financial innovation adoptions of all banks in Kenya. This information includes information regarding the nature of mobile phone banking, ATM banking, online banking and agency banking, for the years 2011 – 2016 because most financial innovations emerged from 2010 and their reports are available and also the study is geared towards measuring their performance in the current years to determine the trend for conclusive evidence to be documented. The data was reported in different units depending on the measures against which each variable will be measured. These data allowed for the calculation measures relevant to this study. This was treated as panel data since it constituted a mixture of cross-sectional as well as time series data.

Primary data was collected using semi-structured questionnaire. A questionnaire was employed for employees, (Finance manager, ICT manager or Relationship/Marketing Manager). The choice of these interviewees is informed by the nature of their jobs that makes them custodians of information about financial innovations adoption.

A letter was obtained from the Department of Commerce and Economic Studies, Jomo Kenyatta University of Agriculture and Technology to enable the researcher to seek a research permit from the National Council for Science, Technology and Innovations. The researcher then contacted the banks management to seek permission to conduct the study in their organizations. The researcher clarified to the respondents the intention of the study through a cover letter with consent note to be signed.

The questionnaires was administered and collected immediately after they are filled in and confidentiality will be assured to the respondents. Both captive method and drop and pick were employed on the respondents' offices as the situation allowed. Secondary data was sought during administering of questionnaire process. If the required reports and records are not available during the questionnaire administration, the researcher will agree with the respondents on the time that they would be available and therefore plan to visit and carry out the document analysis to get the required data. Permission from the relevant authorities would be sort to enable the researcher to make copies of some of the documents for future reference

Reliability is a measure of extent to which an instrument yields consistent results or data after repeated trials (Mugenda & Mugenda, 2003). The reliability of the instrument was estimated using Cronbach's α (alpha). Cronbach coefficient was used to assess the internal

consistency or average correlation of items within the test. Cronbach's Alpha Coefficient value of 0.7 is considered strong (Nunnally, 1978). This study used the recommended value of 0.5 and more as the cutoff point. Pearsons product moment correlation, F and t-tests was used to test for moderation and significance.

ANALYSIS AND FINDINGS

The study was a descriptive cross-sectional survey of 41 commercial Banks licensed by the Central Bank of Kenya. The questionnaires were self-administered to the Finance manager, ICT manager or Relationship/Marketing Manager of the respective commercial banks. The study targeted 41 respondents one respondent from each banks; however, the researcher received response from 40 respondents. Further scrutiny established that three questionnaires were poorly filled and hence excluded from analysis. The effective sample dropped to 37 respondents forming 90.24% response rate, which was considered adequate for analysis.

Therefore, this study's response rate is considered very good for survey research as recommended by Punch (2003) who proposes a score of 80-98% as good response rate, whereas Mugenda and Mugenda (1999) suggest a 50% response rate is adequate, 60% good and above 70% very good. The response rate further is supported by Fowler (1984) cited in Njeru, (2013) suggests that a response rate of 60% is representative of the population of the study. Such a high response rate for this study can be attributed to the use of introductory letters from the University as well as the use of trained research assistant that were equipped with skills on how to build rapport with respondents.

The study adopted the alpha coefficients ranges in value from 0 (no internal consistency) to 1 (complete internal consistency) to describe reliability factors extracted from formatted questionnaires on likert scale (rating from scale 1 to 5). The study used value of 0.70 and above as a quick rule. Test of reliability results are presented in Table 1.

Table 1: Summary of Cronbach's Alpha Reliability Coefficients

Variable	Cronbach's Alpha	Number of items	Decision
Mobile Phone banking	.840	8	Reliable
ATM banking	.817	7	Reliable
Online banking	.753	6	Reliable
Agency banking	.909	5	Reliable
Financial deepening of banks	0.801	5	Reliable

Table 2: Financial Deepening Attributes

Items	Not at all	Small extent	Moderate extent	Large extent	Very large extent	Mean	Std. Deviation
There have been a progressive increase in total credit extended to private sector due to financial innovations adoption in our bank	0.0	5.3	7.9	52.6	34.2	4.1579	.78933
The number of branches have increased in our bank due to proper management of financial innovations	2.6	13.2	21.1	44.7	18.4	3.6316	1.02459
Our bank has witnessed increase in the total liquid liabilities	0.0	2.6	5.3	39.5	52.6	4.4211	.72154
The income of our bank has improved since the adoption of financial innovations	0.0	2.6	10.5	34.2	52.6	4.3684	.78572
Our banks assets have increased as compared to central banks assets	0.0	0.0	5.3	47.4	47.4	4.4211	.59872

This study considered measures of financial deepening of banks as ratio of credit extended to private sector, number of branches, ratio of liquid liabilities, ratio of commercial bank assets and central banks assets and total banks Income. These were based on averages on five financial cycles. The results are presented on Table 3.

The results show an upward trend in all financial deepening measures across the financial cycles. For instance as far as total credit extended to private sector, it recorded an average of 15.53 in 2011/12 and increased to 23.86 in 2015/16 with 2012/13, 2013/14 and 2014/15 registering 18.46, 20.79 and 22.25 respectively. Further number of branches from

financial innovations also increased progressively from an average of 5924.58 in 2011/12 to an average of 16735.08 in 2015/16. The financial cycle 2012/13 registered an average of 9614.61, 2013/14 registered 16406.00 and 2014/15 registering 11376.89. Further total liquid liabilities also increased spontaneously from 4479760713.82 in 2011/12 to 6939146550.82 in 2015/16. The results further showed that ratio of commercial bank assets to central banks assets increased from 15.53% in 2011/12 to 2015/16 in 23.86% with an increase in each performance cycle.

It was also observed further that total income from financial innovations has increased for the five performance years progressively with 2011/12 registering 11100000.00 and 2015/16 registering 229333368.89. Chortareas et al (2011) noted that regardless of the transmission channel, however, one would expect that the waves of financial deepening cannot raise the tide of the economy without affecting bank performance, particularly in emerging economies where the banking sector is the main supplier of funds to the financial system.

Table 3: Measurements of Financial Deepening

Financial Deepening of banks indicator	2011/12	2012/13	2013/14	2014/15	2015/16
Total credit extended to private sector	15.53%	18.46%	20.79%	22.25%	23.86%
Number of branches from financial innovations	5924.58	9614.61	16406.00	11376.89	16735.08
Total liquid liabilities	4479760713.82	4894742217.82	4976461362.89	7061884487.47	6939146550.82
Ratio of commercial bank assets to central banks assets	5.87%	6.83%	8.65%	9.96%	11.70%
Total income from financial innovations	11100000	67000048.09	147000000	324000000	229333368.89

Mobile phone banking dimensions were; investment in mobile phone banking, number of subscribers and number of transaction which are presumed to influence financial deepening measures. This was done by calculating the indices for each of the mobile phone banking dimensions and financial deepening dimensions and performs a regression analysis. The results are presented in Table 4.

Table 4: Effect of Mobile phone banking on Financial Deepening

Model Summary						
Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	
Mobile phone banking constructs		.333 ^a	.111	.101	.90756	
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
Mobile phone banking constructs	Regression	36.038	4	9.009	10.938	.000 ^b
	Residual	289.108	32	.824		
	Total	325.146	36			
Coefficient						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
Mobile phone banking constructs	(Constant)	1.817	.250		7.282	.000
	Investment in mobile phone banking	.249	.076	.201	3.260	.001
	Number of subscribers	-.147	.054	-.155	-2.708	.007
	Number of transactions	.211	.064	.208	3.272	.001

The effects of mobile phone banking constructs on financial deepening are shown in Table 4. The study found a relatively moderate association between mobile phone banking constructs and financial deepening ($R = .333$). Coefficient of determination ($R^2 = .111$) indicates that mobile phone banking constructs together explain 11.1 % of variation in financial deepening. Mobile phone banking constructs significantly influence financial deepening (High t-values, $p < 0.05$).

The construct with highest influence is investment in mobile phone banking ($\beta = .249$, $p < 0.05$). Other construct with positive influence is number of transactions ($\beta = .211$, $p < 0.05$). However number of subscribers manifested negative but significant results indicating that although number of subscribers is important factor in influencing financial deepening, the effect

is negative which may be due to the limited number of customers with low knowledge on how to use mobile phones especially in semi urban and remote areas.

CONCLUSION AND RECOMMENDATIONS

The study determined the influence of mobile phone banking on the financial deepening of commercial banks in Kenya. Mobile phone banking dimensions were; investment in mobile phone banking, number of subscribers and number of transaction which are presumed to influence financial deepening measures. The study found a relatively moderate association between mobile phone banking constructs and financial deepening. However the relationship was significant.

The mobile banking concept in full realization of financial deepening in its full impact is yet to be realized as shown by a moderate influence and therefore the Government must ensure that there are better policies to manage this subsector which has potential to be a very high volume financial transaction platform. Since mobile banking may over step and overtake some commercial banking functions, there is need to regulate and confine it to its main objective of remittances. The Government should also make it mandatory for all mobile network companies to participate in this product to reduce costs for consumers.

LIMITATIONS OF CURRENT STUDY

The study had a limitation of failure to have uniform perceptions from those interviewed thus at times the perceptions conflicted with findings from panel data. This was overcome Therefore generalization of the results to cover the whole financial sector must be made with this limitation in mind. However this provides an opportunity for further research.

Since part of the research data adopted self-administered questionnaires which was considered cost-effective and time-saving, the study automatically became subject to potential bias (Polit& Beck, 2008). This bias was countered through adoption and use of tested and validated instruments like the validity test as advocated by (McMahon, 2010) and reliability test as supported by (Cronbach, 2001).

This research was done in banks which are mostly private and thus it presented a challenge of obtaining relevant information needed for the study as the employees were keen to maintain confidentiality. This was addressed through obtaining introduction letters from both the University and the National Commission for Science and Technology and thus with these permission the respondents were able to provide relevant information.

SCOPE FOR FURTHER RESEARCH

Future research efforts should also extend the scope of this study by including important contextual variables such as, competition, and/or inflation to the research framework, which may help explain some of the insignificant findings in this study. One direction for future research is to investigate the barriers that hinder commercial banks' commitment to financing the economy like resource constraint as to lack of human, financial and technological resources.

Future studies could make the use of multiple respondents from each bank to ease in the collection of data. Multiple respondents may be selected from several departments (marketing, finance) and various management levels, so that the analysis could be extended to see how employees in separate departments and at various management levels differ with respect to the major variables in this study.

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