EFFECTS OF TECHNOLOGY INNOVATION ON COMMERCIAL BANK PERFORMANCE IN TANZANIA

KAMOZA OWDEN NGANDO

A DISSERTATION SUBMITED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PROJECT MANAGEMENT OF THE OPEN UNIVERSITY OF TANZANIA

2017

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the senate of the Open University of Tanzania a dissertation titled: “Effects of Technology Innovation in Commercial Bank Performance in Tanzania” in partial fulfillment of the requirements for the degree of master in Project Management of the Open University of Tanzania.

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Dr. Salvio Macha

(Supervisor)

…….

Date

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DECLARATION

I, **Kamoza Owden Ngando,** do hereby declare that, the contents of this dissertation is a result of my own original my knowledge, this work has never been presented for similar propose or degree awards in any other university.

DEDICATION

I hereby dedicate this work to my lovely wife Neema Kamoza who encouraged me throughout the period of undertaking this study and also to our sons Grivis, Wolter and our Baby Girl Gradness and Angel fully parental care during the period of my study.

ACKNOWLEDGEMENT

This study would not have been possible without the strong and endless support and guidance of Dr. Salvio Macha. I am deeply indebted form his honorable support from the time of developing my proposal to the time of completing the study.

Also I acknowledge the material and moral support from my lovely wife NEEMA who gave me full assistance during the while process of undertaking my research. Her courage made it possible for me to accomplish the study without psychological obstacles.

I also extend my sincere gratitude to the Commercial Bank staff especially at the customer care at Tanzania who gave me any assistance I needed. Lastly but not last I would like to extend my gratitude to the faculty of Business management (FBM) staff of Open University of Tanzania for willingly giving me the needed supports for my study.

God bless you all.

ABSTRACT

This study will examine the contribution of the technology advancement on improving the performance of commercial Bank in Tanzania. Technology and Commercial Bank sector plays an important role in development in the economy especially for the less developed countries. This serves as the role of heart of the body of human to pump the financial resources that are necessary for the growth of economy and the well being of a nation and her people. The research has focused on the contribution of the Technology and Commercial Bank sector on economy efforts among the people of Tanzania, Technology and Commercial Bank has been looked at four main variables namely as income, employment level, saving and assets ownership by the people of Tanzania, In order to analyze the contrition of Technology and Commercial Bank institutions in Tanzania. On the above mentioned parameters, primary date was collected through questionnaires for 300 respondents. The research found that there has been significant challenges among People as recognized and proved by an increase in income employment level saving and assets ownership to them in which case Technology and Commercial Bank has resulted. Apart from these achievements it is recommended that the Technology and Commercial Bank section should invest more in order to advertise its service so that to recruit more people for them. Also instead of concentrating in urban areas only, there is need for them to expand services to the rural areas whereby the there's no investment of Technology and commercial Bank.

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LIST OF ABREVIATIONS

ATMs	Automated Teller Machines
BOT	Bank of Tanzania
CB	Commercial Bank
EFT	Electronic Funds Transfer
EPS	Earnings per Share
FDI	Foreign Direct Investments
GCI	Global Competitiveness Index
GDP	Gross Domestic Product
IBM	International Business Machines
ICT	Information and Communication Technology
IT	Information Technology
MIS	Management Information System
MTP	Medium Term Plan
NBC	National Bank of Commerce.
NMB	National Microfinance Bank
POS	Point of Sale
PWC	Pricewaterhouse Coopers
ROA	Return on Assets
ROE	Return on Equity
SMS	Short Message Service
STD	Standard Deviation Sent from my
U.K	United Kingdom
U.S	United State

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Innovation consists of firm developing new products or production processes to better perform their operations in case the new products could be based on the new processes (Tufano 2002; Lawrence 2010) in the financial services industry, innovation is viewed as the act of creating and popularizing new financial instruments, technology intuitions and markets, which facilitate access to information, trading and means of payment (Solans, 2013). Lerner (2002) puts forward that innovations are not just critical for firms in the financial services industry, but also affect other companies. For instances, enabling them to raise capital in larger amounts and at a lower cost than they could otherwise and that innovation an important phenomenon in any section of a modem economy.

According to Nofie (2011), in the finance sector is the arrival of new or better product or a process that lowers the cost of producing existing financial services, Akamavi (2005) also that innovation in the financial services sector has led to recent fundamental change including; deregulation, increasing competition. Performance (Roberts and Amit, 2003). This can only be maintained by ceaseless innovation and improvement of the product and process (Porter, 2004).

In a study on the baking sectors of 11 Latin American countries, Yildirim and Philppatos (2007) stipulate that rivalry between Banking pushes the Bank to engage in a differentiation processes of the products they supply and can stimulate financial

innovation. Yildrim and Philippatos (2007) find that a high degree of foreign investment in Bank capital is associated with a high level of competitiveness. This improves the quality and differentiation of their products and simulates financial innovation by introducing more modem skills, management techniques and technologies. Size also makes it easier to diversify business risk by starting up a variety of innovative projects (corroher, 2006) Anbalagan (2011). Find s that some types of financial innovations are driven by improvements in computer and telecommucation technology and argues that for most people the creation of the Automated Teller Machines was greater financial innovation than asset backed securitization.

Ferreira, Manso, and silva(2010) found that private instead of public ownership spurs innovation. Empirical evidence using United states data shows that laws (Fan and White, 2003; Armour and Cumming 2008; and Acharya and Subramanian, 2009), corporate governance (Subramanian and Subramanian 2009 and chemmanur and Tian, 2010) ,capital structure (Atanassov, Nanda, and Seru ,2007), Stock liquidity (Fang , Tian, and Tice ,2010), product market competition market competition (Aghion ,Bloom Blundell, Griffith and.

There new products can be matched more closely to the demands risk. Preferences of both investors and borrowers and improve the completeness of financial markets. The innovation process has been underpinned by the widespread and ready electronic access to news and information on economic and financial development and market responses.

With the deepening of the reform process, Chinese commercial banks' traditional businesses operations mode' the wholesale credit operations' have been changing and the ratio of commercial banks' retail businesses have been increasing. For example the Bank of china as an example during 2006-2007, the growth rate of retail business was 200% which was 2.5 times of the growth rate wholesale business at the same period one of the important reasons for this change is innovation which includes innovation in business philosophy management, procedure, product, promotion and scientific and technology (Yin Zhengzheng, 20 10).

Financial innovations arise due to reasons (Batiz-Lazo and Woldesenbet, 2006). Gorton and Metrick (2010) and Batiz-Lazo and Woldesenbet (2006) summarize the reasons for the growth of modern financial innovation as' reduction in bankruptcy costs, tax advantages, reduction in moral hazard, reduced regulatory costs, transparency and customization .A highly turbulent environment leads to successful innovation creating a unique competitive position and competitive advantage and lead to a superior. The study intends to focus on the effect of technology innovation on commercial banks of Tanzania.

1.2 Statement of the Problem

Despite the undeniable importance of financial innovation in explaining banking performance, the impact of innovation on performance, is still misunderstood for two main reasons first there is inadequate understanding about the drivers of innovation and secondly innovations' impact on bank's performance remains lowly untested (Mabrouk and mamoghli, 2010). A student by De young 1 and Nolle (2007) adopt an approach to the innovation performance relationship which does not into account the

antecedents to innovation inside and outside the banking organization all of which could influence this relationship, Previous students like prooja and (2009) Franscesa and Claeys (2010) Batiz -laizo and woldesenbet (2006) and Mwanis\a and Muganda (2011) have produced mixed results regarding the impact of financial innovations on bank performance. Pooja and Singh (2009) and Franscesa and Claeys (2010) in their studies conclude that financial innovations had least impact on bank performance, while Baitiz- Lazo and woldesenbet (2006)and mwania and muganda (2011) concluded that financial innovation had significant contribution to bank performance it is at the center of such mixed conclusion that created and necessitated the need to carry out a study from Tanzania context to establish the effect of bank innovations on commercial banks 'performance.

1.3 General Objective of the Study

The general objective of the study was be to establish the effects of technology innovation on commercial bank performance in Tanzania.

1.4 Specific Objectives

(i) To identify at which extent Automated Teller Machines contributes to Commercial Bank performance in Tanzania.

(ii) To determine at which extent Mobile Banking contributes to the Commercial Bank performance in Tanzania.

(iii) To examine at which extent Internet Banking contributes to the Commercial Bank performance in Tanzania

1.4 Research Questions

(i) To what extent Automatic Tellers machine contribute to the Commercial Bank performance Tanzania?

(ii) To what extent Mobile Banking contribute to the Commercial Bank performance in Tanzania?

(iii) To what extent internal banking contribute to commercial bank performance in Tanzania?

1.5 Research Questions

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(iii) To what extent internal banking contribute to commercial bank performance in Tanzania?

1.6 Significance of the Study

The study is relevant to the following stakeholders:

This study is of help to the government of Tanzania as it seeks to leverage on technology to grow the financial services sector and enhance financial access and inclusion. One of the key drivers of change in Tanzania is information technology and innovations. Though the findings of the study, the government of Tanzania is able to appreciate which areas of innovation to support the banking sector by either waiving taxes or other non-monetary incentives.

The study findings can help banks in evaluating the importance of financial innovation on their performance in terms of bolstering profitability. Banks, especially commercial ones, are swiftly becoming more aware of the importance of financial innovation in this era and this study adds impetus to knowledge on the link between innovation and performance.

Commercial banks in Africa will learn from this Kenya study and understand the innovations that they can replicate in their businesses in order to improve on their performance. The study findings inform them on which innovations have better link to financial performance and hence save on the costs of conducting cost benefit research in their institutions.

To the scholars, the study is value-added to the existing body of knowledge as it recommends ways for improvement of financial performance by leveraging on technology innovations. Nevertheless, this study serves as a stepping stone for newer research on financial innovation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter present definition of key concept used in the study and carry out control review of theories relevant to the effect of technology innovation and it determents. This review will draw illations to different approaches and methods used by other studies. Empirical analysis of relevant studied on automatic tellers machines internal banking , and mobile banking have been covered to identify research gaps from theoretical and improved literature the chapter present the concept framework states.

2.2 Historical Development of Commercial Bank in Tanzania

The banking sector in Tanzania has undergone substantial structural change since financial sector reform in 1991. During that period of reforms the banking sector has experienced drastic and comprehensive changes; the sector underwent major transformations and transformation and more numbers of banks were established and commercial banks constitute the largest part of the banking system in Tanzania , commercial banks in Tanzania may be subject to the regulations of the of the Bank of Tanzania, as contained under the provision of the Bank of Tanzania at of 1995. Besides, there are other laws that may govern all commercial banking transactions, including the banking and Financial institutions Act and the Foreign Exchange Act. These acts specify various guidelines that have to be complied with in risk asset management, and exposure limits. The number of commercial banks operating in the country increase to 56 by the end of October 2016 from the 42 registered in the year 2010.

2.3 Conceptual Definitions

2.2.3 Commercial Banking

Is a financial institution that provides services, such as accepting deposits, giving business loans and auto loans, mortgage lending, and basic investment products like savings accounts and certificates of deposits. The traditional commercial bank is a brick and mortar institution with tellers, safe deposits boxes, vaults and ATMs. However, some commercial banks do not have any physical branches; they generally pay higher interest rate on investment and deposits, and charge lower fees (Business Dictionary, 2011).

2.2.4 Automated Tellers Mechanics

(ATM), also known as Cash Point, Cash Machine, is a computerized telecommunications device that provides the clients of a financial.

2.2.5 Internet Banking

Is a system which allows individuals to performance banking activities via the internet (Atanassov, Nanda and Seru, 2007).

2.2.6 Mobile Banking

Is performing banking transactions through a mobile device such as a mobile phone or Personal Digital Assistant (Boston Consulting Group, 2009.

2.2.7 Financial Performance

Is a measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall

financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. Should be taken in aggregation. Line items such as revenue from operations, operating income or cash flow operations can be as well as total unit sales (Business Dictionary, 2011).

2.4 Theoretical Review

This section explores the various theories and model that can explain the effect of technological innovation on the financial performance of commercial banks. Several theories were advanced: these include; diffusion of innovation theory disruptive innovation Theory of Creative Destruction.

2.4.1 Diffusion of Innovation Theory

Roger's (1995) Diffusion of Innovation (DOI) theory is a popular model used in information system research to explain user adoption of new technologies. Rogers defines diffusion as 'the process by which an innovation is communicated through certain channels over time among the member of a social society' (Rogers, 1 995).An innovation is an idea or object that is perceived to be new (Rogers, 1995).

According to DOI, the rate of diffusion is affected by an innovation's relative advantage, complexity, compatibility, trial ability and observability. Rogers (1995) defines relative advantage as the degree to which an innovation is seen as being superior to its predecessor; complexity, which is comparable to TAM's perceived ease of use construct, is 'the degree to which an innovation is seen by the potential adopter as being relatively difficult to use and understand'. Compatibility refers to 'the degree to which an innovation is seen to be commutable with existing values, beliefs,

experiences and needs of adopters'. Trial ability is the 'degree to which the results of an innovation are visible (Rogers, 1995).

The diffusion theory is relevant because it explains the season why banks adopt technical innovations. One of the reasons why banks adopt technical innovations is relevant advantages. This means that banks that adopt technical innovation have relatively better financial 1 advantage than those who do not.

2.4.2 Disruptive Innovation Theory

The disruptive innovation is probably of the one of the most important innovation theories of the last decade. The core concepts behind it circulated so fast that already in 1998, one year after the publication of the theory, people were using the term without making reference to Haward professor Clayton Christensen or to his book the innovator's Dilemma (Harvard Business School Press). The term disruptive innovation as we know it today first appeared in the 1997 best-seller. The Innovator's Dilemma. In the book Harvard Business School professor Clayton Christensen investigated why some innovations that were radical in nature reinforced the incumbent's position in a certain industry, contrary to what previous models (for instance the Henderson- Clark model) would predict. More specifically he analyzed extensively the disk drive industry one could find in our economy. Just consider by 35% per year, from 50 kilobytes in 1967 to 1, 7 Megabytes in 197212 megabytes in1981 and 1100 megabyte in 1995. Disruptive theory is relevant in that is explain the type of technology banks adopt. The banking technology is disruptive because it does away with traditional banking.

2.4.3 Schumpeterian Theory of Creative Destruction

Schumpeter (1939) who saw innovations as perpetual gales of creative destruction that were essential force driving growth rates in a capitalist system. Schumpeter' s thinking evolved over his lifetime to the extent that some scholars have different aired his early thinking where innovation was largely dependent on exceptional individuals willing to take on exceptional hazards as "an act of will", i.e., entrepreneurs, from his later thinking that recognized role of large corporations in organization and supporting innovation. This resulted in his emphasis on the role of oligopolies in innovation and which later was false viewed as the main contribution of his work. (Freeman,1994).

Schumpeter (1928) pointed to the discontinuous and disruptive nature of technological change in capitalism that brings the inseparable combination of short-term insatiably and long-term growth. He was not a technological determinist but recognized the social and organization force that played the key roles in his cyclist process of industrial change. Schumpeter argued that entrepreneurs, who could be independent inventors or R&D engineers in large corporations, created the opportunity for a new profit with their innovations. In turn, groups of imitators attracted by super-profits would start a wave of investment that would erode the profit margin for the innovation. However, before the economy could equilibrate a new innovation or set innovations, as Kondratievl cycles, would emerge to begin the business cycle over again.

For all his insight on the role of innovation, Schumpeter still did not really explain the source of innovation. He was able to point to its role in timing economic cycles but did not address its source. This rather interestingly allowed Keynesian economics to

argue that levels of investment were the cause of innovation. It was not unity the 1960s that economists would begin again to search for the source of innovation .The importance innovation was highlighted by researchers like Abramo vitz (1956) and Solow (1957) who were able to demonstrate how little neo classical economics was able to explain. Based on data on the United state economy from 1909-49, Solow showed that only 12.5 percent of the increase of per capita output.

2.5 Empirical Review

Aragba-Akpore (1998) on the application of information technology in Nigeria banks and pointed out that IT is becoming the back of bank services regenetion in Nigeria. He cited the Diamond Integrated Banking services (DIBS) OF Diamond Bank LIMITED AND Electronic Smart Card Account (ESCA) of all state Bank Limited as Efforts gened towards creating sophistication in the banking sector. Ovia (200) discovered that banking in Nigeria has increasingly depended on the development of Information Technology and that the IT budge for banking id by far larger than that of any other industry in Nigeria .He contended that On line system has facilitated internet banking in Nigeria as evidenced in some of them launching websites .He found also that banks now offer customers the flexibility of operating an account in any branch irrespective of which branch the account is domiciled Cashless transactions were made possible in our society of today.

In a study conducted by Irechukwu (2000) in Nigeria he lists some banking services that have been revolutionized through the use of ICT as including account opening customer account mandate, and transaction prosing and recording unlike the aforementioned studies Mantel (2000) the demand —aide of electronic online bill

payment empirically analyzing the demographic characteristics of users. Among other things the abhor find that electronic bill payers tends to be older female, higher income, and homeowners Aghoola(2001) studied the impact of computer automation on the banking services of some banks to their customers in Lagos. The was however restricted to the commercial nerve center of Nigeria and concentrated on only six banks He made s comparative analysis between the old and new generation banks and discovered variation in the rate of adoption of the automated devices.

The primary line of research relating to online banking has been aimed at understanding the determinates of bank adoption and how the technology has affected bank performance. The survival of an enterprise in the age of knowledge-based economy depends on how to improve their organizational innovation capability. Technological innovation is the key variable and means of different between logistics services providers. Commercial banks can inverse their performance by employing new technologies. They should employ new information technologies to raise their service capability in the e-commerce age (Agboola, 2001) In term of online adoption, Furst et al, 2002) Find that U.S national banks (by the end of the third quarter of 1999) were more likely to offer transactional websites if they were: larger, younger, affiliated with a holding company, located in a urban area and had higher fixed expenses and non- interest income.

The ICT products in use the banking in many developing and developed include Automated Teller Machine, Smart Cards, Telephone Banking Electronic Fund Transfer, Electronic Interchange Electronic Home AND office Banking (Agboola, 2002) According to yasuharu imolemation of information technology and

communication networking has brought revolution in the fasting of the banks and the financial institutions It brought revolution in the functioning of the banks and the financial institutions it is argued that dramatic structural changes are is store for financial services industry as a result of the internet revolution; others see a continuation of trends already under way information and Communication Technology has provided self-service facilities (automated customer service machine) from where prospective customers can complete their account number and receive instruction on when and how to receive their cheque books, credit cards (Agboola, 2004).

According to Agboola (2004) the application of information and communication technology concepts, techniques, policies, and implementation strategies t banking service has become a subject of fundamental importance and concerns to all banks and indeed a prerequisite for local and global competitiveness. ICT directly affects how managers decide how they plan and what products and services are offered in the banking industry. It has continued to change the way banks and their corporate relationships are organized worldwide and the variety of innovative devices available to enhance the speed and quality of service delivery.

However, most research about innovation focused on manufacturing industries through increasing attention has paid to innovation in service industries recently (Gallouj, 2002; Howells et al, 2004). Sebastian and Lawrence (2004) in their paper titled “costumer focus in banking services” had stressed on importance of customer relationship management. The aim of the banks should be to retain the existing. Customers and acquire the new customers. In order to add to the services officered.

To win the customers the modem banking should integrate technology and deploy marketing strategies that would enable banks to maximize profit through customer satisfaction. In market with fierce competition providing the customer with value addition is the only way to achieve complete sustained customer satisfaction.

Turning to online bank performance De young and Nolle (2007) report that internet adoption improved U.S community bank profibility-primarily through deposit-related charges. In a related study. Hernando and Nieto (2007) find that over time, online banking was associated with lower costs and higher profitability for a sample of Spanish banks. Both papers conclude that the internet channel is a complement to-rather than a substitute for physical bank branches.

The empirical literature SCBs has focus on the determinants of bank adoption and diffusion of this technology as well as on how SBCS has affected credit availability. Two studies have statistically examined the determinants of the probability and timing of large banks adoption of SBCs. Frame et al (2001) and Akhavein et al (2005) both find an important role for organizational structure in the adoption decision ;banking organizations with fewer bank charters and more bank branches were more likely to adopt and also to adopt sooner.

This suggests that large banks with a more “centralized’ structure were more likely to adopt SBCs. The use of the UBCs technology still appears to be mostly to large banking organization. However one recent study suggests that small banks now often make use of the consumer credit score of the principal owner of the firm (Barger et al, 2007).

The dramatic increase in individual use of the Internet in the l990S crated the possibility of a new organizational form in banking the Internet —only bank. According to Delgado et al (2007) as of mid year 2002 there were some 35 internet-only banks operating in Europe and another 20 in the U.S However in Europe virtually all of these banks were affiliated with existing instructions, while in the U.S. they tended to be novo operations This may explain why most /all of the closure) or established a physical presence to supplement their Internet base. This suggests that the dominant technology is one of clicks and mortar.

De Young (2005) finds that as compared with conventional novo banks the Internet de novo banks are less profitable due to low business volumes (fewer deposits and lower noninterest income) and high labor expenditures. However the author also reports that the financial performance gaps narrow quickly over tome due to scale effects. Delgadoet al, (2007) similarly find European internet banks demonstrate technology —based scale economies.

Roselyn et al (2013) conducted a study on influence of bank innovations on income of commercial banks in Kenya and concluded that bank innovations have a moderate influence on the income of commercial banks in Kenya. Since technological innovation is aggressively and continuously adopted in Kenya the government should innovation is aggressively more incentives for research and development to researchers to continue investing their time skills in discovering more innovations. These authors recommended that the government should pursue a strategy to provide incentives for technology transfer from more developed economies in order to promote the adoption of world class innovation. More incomes for the banks due

adoption of innovations translates to more jobs and improvement of the country's gross domestic product and therefore contributing to the overall macroeconomic goals of the government (Roselyn et al, 2013) Mwania et al,2011) have predicted mixed results regarding the impact of financial innovation has significant contribution to bank performance.

Gakure (2013) study on whether bank innovations influence profitability of commercial bank in Kenya and concluded that bank innovations had s statically significant influence on bank profitability. This means that the combined effect of the bank innovations in this research is statically significant in explaining the profit of commercial banks in Kenya. Bank in Kenya have ached more than a decade of boosting their earning capability and controlling through adoption of innovations like the mobile internet banking and recently the agency banking.

Simpson (2002) suggests that e-banking is driven largely by the prospects of operating costs minimization operating revenues maximization. A comparison of online banking in developed and emerging market revered that in developed markets lower costs and higher revenue are more noticeable, while Sullivan and Richard (2000) finds no systematic evidence of a benefit of banking in US banks had higher Return on Equity(ROE) by using the click and mort an business model. Furst (2002) also examined the determinants of internet banking adoption and observed that more profitable banks adopted internet banking adoption and observed that more profitable banks adopted internet banking after 1998 but yet they were not the first cost and affiance gains for banks yet very few banks were using it and only a little more than half a million customers were online inn U.K kagan, et al (2005) in the ir study on

whether internet banking affects the performance of community banks found that banks that provide entrance online banking services tend to perform better. They further found out that online banking helps community banks improve their earning as measured by return equity and improved asset quality by reducing the proportion of overdue and underperforming assets.

De Young (2005) analyzed the performance of Internet only banks versus the brick and mortars in the US market and found strong evidence of general experience effects available all start —ups .yet there is little evidence that technology based learning accelerates the financial performance of Internet-only start-ups. Finds hat bank profitability is lower for pure-play (internet-only) banks in the US market. In a later study De Young. Lang and Nolle, (2007) analyzed the US community Banks Market to investigate the effects of internet banking on bank performance. They compared the brick and mortar banks performance to click and mortar banks do have transactional web sites over a three year. Their finding suggest that internet banking improved bank profitability, via increase in revenues from deposit service changes. Movements of deposit from checking accounts to money deposit accounts increased use of brokered deposits, and higher average wage rates for bank employee were also observed for click and mortar banks.

Agboola in his study on Information Technology (ICT) in banking operations in Nigeria using the nature and of adoption of innovative technologies; degree of utilization of the identified technologies; and the impact of the adoption of ICT devices on banks, found out technology was the main driving force of competition in the banking industry. During his study he witnessed increase in the adoption of

ATMs, left, smart cards, electronic home and office banking and telephone banking. He indicates that adoption of ICT improves the banks; image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bank management to intensify& investment in ICT products to facilitate speed, convenience and accurate services or otherwise lose out to their competitors.

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

The profitability gains assorted with the adoption of transactional web she are mainly explained by a significant reduction in overhead expenses. This effect is gradual, becoming significant eighteen months after adoption and reaching a maximum generally two and a half years after adoption. Their study showed that multichannel banks parent statistically significant evidence of efficiency gains that is reduction in general expenses per unit of output. Banks would further profit from cost reduction to the extent that the internet delivery channel factions as a substitute for traditional distribution channels. Their analysis shows that this effect varies over time and explains in term of cost and income structure the main of better performance.

Shirley et al (2006) studied the impact of information technology on the banking industry and analyzed both theoretically and empirically how information technology related spending can affect bank profits via competition in financial services that are

offered by the banks. (IT related products are internet banking electronic payments, security investments, information exchange, Berger, 2003). Using a panel of 68 US banks for period of over 20 years to estimate the impact of IT on profitability of banks; they found out that though IT might lead to cost saving higher IT spending can create network effects lowering bank profits. They further contend that the relationship between IT expenditures and bank's financial performance is conditional to the extent of network effect. They say that if network effect is too low, IT expenditures are likely to; reduce expenses, increase market share, and increase revenue and profit.

Kihumba(2008) the reasons for innovation financial performance of 43 banks between 200 and 2007, how each factor caused innovation in the Kenyan market and how innovation has annual revenue, business volume, customers' turnover and reduced costs of operation, facilitated expansion of market share and geographical coverage of the bank. He found that some financial institutions do innovated o utilize their excess capacity and to maximize their revenues within existing capacity.

Malhotra et al (2009) in the study on the impact banking on bank performance and risk found out that on average internet banks are larger more profitable and are more operationally efficient. They also found that internet banks have higher asset quality and are better managed to the expenses for building and equipment and that internet banks India rely substance on deposits. They further found out that smaller banks that adopt interne banking have negatively impacted on profitability. Mabrouk et al (2010) in study on Dynamics of Financial Innovation and performance of Banking firms: Context of an Emerging Banking Industry, analyzed the effect of the adoption of two

types of financial innovations namely product innovation (telephone banking and SMS banking and so on) and process innovation (magnetic strip card (debit, ATM and credit card) automatic cash dispenser: (automatic teller machine: Electronic payment terminal and so on) on the performance of bank. Their analysis included tow adoption behaviors, firs mover in adoption of the financial innovation and imitator of the first moves. They found out that first mover intuitive in product innovation improves profitability process initiative has a positive effect on profitability and efficiencies. Bank s that imitate less profitable and efficient first mover. Nader (2011) analyzed the profit efficiency of the Saudi Arabia Commercial banks during the period 1998 -2007. The results of his study indicated that availability of phone baking number of ATMs and number of branches had a positive effect on profit efficiency of Saudi banks. On the contrary he found that the number of point of sale terminals (POSs) availability of OPC banking availability of mobile banking did not improve profit efficiency.

2.6 Research Gap

Most of the reviewed studies focused, on a number of variables in regards to effect of innovation on Commercial Bank performance in the world: Also the studies produced a mixed results, on the variables us which have been used. Only few studies have been done in Tanzania context the study intends to fill the existing gap by focusing only, on three variables, namely as ATMs, Mobile Banking and internet banking particularly in Commercial Bank of Tanzania.

2.7 Conceptual Framework

The objective of this study is to determine the effects of technology innovation on commercial bank performance in Tanzania. The specific objectives are to identify the

contribution of ATMs on commercial Bank performance in Tanzania to determine the contribution of mobile banking on commercial bank performance, to establish the contribution of internet banking on commercial bank performance. This section presents a conceptual model for the study of commercial bank performance as a dependent variable and is relationship on ATMs, mobile banking and internet and internet banking as independent variable.

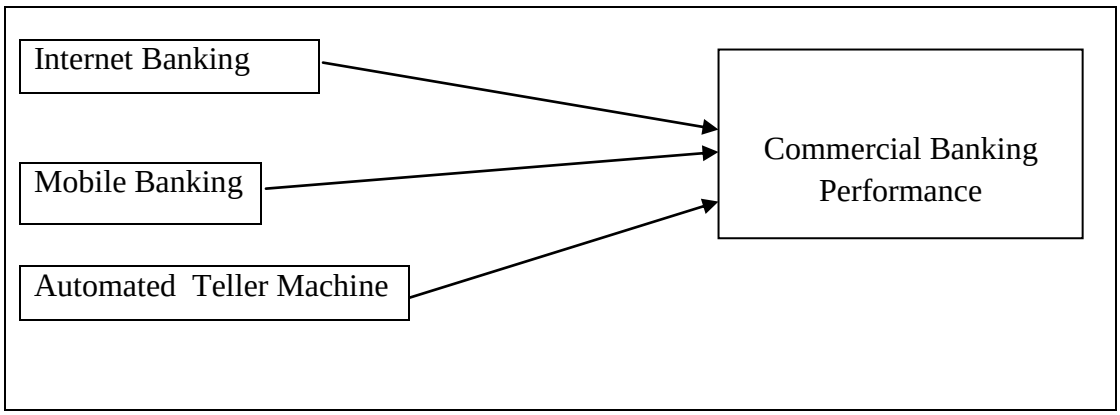

Figure 2.1: Concept Framework

Source: Field Data 2016

CHAPTER THREE

RESERCH METHODOLOGY

3.1 Introduction

This chapter presents research design and methodology for investing the effect of Technology innovation in commercial Bank of Tanzania and its determinants by detailing Research design, Target population, Sample Design and Procedures, Variable and Measurements, Data collection and Analysis.

3.2 Research Design

This study attempted to determine the factors affecting Technology Innovation in Commercial Bank of Tanzania. We use quantitative data analysis approaches to establish the cause-effect relationship based on factors reported in previous studies as explained in empirical reviews. The study makes use of descriptive census survey design, which was involve the collection of longitudinal data in 2015 .The survey is collected because of its appropriateness in obtaining the required quantity of data in running quantitative analysis (Hair et al 2006). According to Saunders et al (1997) survey method allows the collection of large amount of data from a sizable population in a highly economical way. Surveys are also standardized allowing for easy compassion.

3.3 Target Population

The target population of the study was being all Commercial Bank operating in Tanzania. This commercial Bank was be used in the study since they are currently using financial innovation in their operation. There are almost 56 commercial in Tanzania, (BOT, 2016).

3.4 Measurement and Variables

Three independent variables were being used in the study: These are ATMs, Mobile Banking and Internet banking. ATMs will be measured by a numbers of ATMS, at the commercial bank in Tanzania. Mobile banking will be measured by numbers of electronic bills payments, fund transfers. Internet banking will be measured by online loan application; balance inquiries bill payment, stop payment request. Commercial bank, performance will be dependent variables and will be measured by return on assets and profitability.

3.5 Sample Size and Sampling Procedure

Kombo et al (2006) define a sample as a finite part of a statistical population whose properties are studied to gain information about, who sample. Sanders et al, (2003) define sampling as the process of selecting a number of individuals for a study from a large group referred to as the population. This study intends to quality Technology Innovation of Commercial Banks for the period 2000 to 2015: Commercial Bank that was licensed before 2000 is omitted from the study due to lack of coherent data. The sampling process will use the multi-stage sampling. In the first stage cluster sampling will be used to group the target population in Top management. The second stage involved stratified sampling, which will group commercial Bank manager in middle management. In the third stage involved stratified sampling which will group the Commercial Bank manages in lower management. Finally, systematic random sampling will be used to select the individual respondents for the study.

The sample size was computed using Fischer's (1998) formula (n= Z^2pq $/d^2$), where:

N= Sample size

Z= 1.96, that is the value of Z corresponding to the 95% confidence level.

P=0.5 (50%)

q=1-p (1-0.5=0.5)

d=0.05 (5% error margin)

This gave a minimum sample size of 384 respondents. It has been suggested by Sekaran (2000) that a range of minimum sample size of 30 to the research was self designed closed ended questionnaires based on liker scale as the main mode of data collection. The use of questionnaires was justified because it was affordable and effective way of collecting information from a population in a short period of time and at reduced costs. The questionnaires also facilitated easier coding and analysis of data which was collected, the closed ended question ensured that the respondents were restricted to certain categories in their responses.

3.6 Data Collection Procedure

The researcher used questionnaire in the collection of the data. The questionnaire was personally administered by the researcher based on a drop and pick after one day basis. This method of administration was preferred because it had higher response rate.

3.7 Validity and Reliability of the Instruments

Before administering the questionnaires in bulk, pre-testing (piloting) of the questionnaires done prior to give out the other questionnaires. The instrument was pre-tested (pilot study) on a population that has similar homogeneous characteristics the pilot study include commercial Bank Tanzania. The pilot help in modifying

various items in order to rephrases, clarify and clear up any ambiguities in the questionnaires. Reliability is the measure of the consistency of the results from the tests of the instruments. It is a measure of the degree to which a research instrument yield consistent results or data after repeated foral. It is influenced by random error. Reliability of the research instrument calculated using cronbach's coefficient alpha for either even or uneven items based on the order of number arrangement of the questionnaire items.According to Fraenkel and Wallen (2000), as a rule of thumb a proposed psychometric instrument should only be used if the alpha value, obtained is 0.70 or higher on a substantial sample. The following is the Cronbach's coefficient alpha formula to be

$$X= \frac{NC}{V+(N-C).C}$$

N= Number of items

$\overline{C}$ = The average inter-item covariance among the items and

$\overline{V}$ = average variance validity is the accuracy and meaning fullness of inferences, which are based on the results. It is a measure of how well a test measure and what it is supposed to measure. It is concerned with the accuracy representation of the variable under study. It is influenced by systematic error in data. This was addressed in this study by good instrument design to reflect the research objectives and pre-testing the instrument. (Borg and GaIl, 1997).

3.8 Data Analysis

Before the actual data, analysis data obtained through questionnaires was validated, edited and then coded. The returned instrument was scrutinized in order to determine correctness and accuracy. Data was analyzed using descriptive and inferential

statistics with the aid of Statistical Package for Social Science (SPSS) version 17. Correlation analyses used to measure the relationship between variable. Regression model used to make predictions or inferences about the population. More specifically the researcher used multiple regression models to establish if the relationship between the independent variable and the dependent variables were statistically significant

The model will be shown below

$Y_1 = B_0 + B_1 + (X_1)\ B_2 + (X_2) + B_3(X_3) + E$

Whereby:

Y_1 =Bank Performance

B_1ATMS

B_2Internal Bank

B_3Mobile Banking

E=Error term

B_1, B_2, $B_3$are the net change in Y

The item independent variables and dependent variable was derived from the mathematical expression which X_1 (i = 1) y, 3 are generally independent variable and the dependent variable.Y is said to be the function of X_1 (i= 1, 2, 3) and that Y = F(x_1). This means that the variation of Y depends on of X_1. The regression coefficient B0 is the Y intercept, whichB_1, B_2 , B_3 , B_4 and B_5 are the net change in Y for each change of X_1, X_2, X_3, X_4, x_5

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents results of` this study. Results are accompanied by discussion relating them to the literature and the study objectives. The chapter begins with reliability statistics of the variable followed by factor analysis, descriptions statistics of the variables, correlation matrix to establish the extent of correlation among variable and conclude with a section presenting regression results assessing the determents.

4.2 Reliability Statistics

Table below indicates the reliability statistics based on Cronbach's Alpha statistic. The recommended threshold is normally 0.7. My statistics are well above it, indicating that the items under each variable to be used to measure the respective dependent and independent variables are reliable and were used to represent such levels of measurements.

The measure of sample properties, KMO measure of sampling adequacy and Bartlett’s test of Sphericity, indicated that the sample the sample properties met the required threshold levels as indicated in the Table 4.2.

Table 4.1: Reliability Statistics

s/n	code	items	Cronbach's Alpha
	P	Bank performance (dependent variable)	
	a1_p	ATMs influence reduction of operational costs and hence better return on assets for the bank	0.866
	a2_p	ATMs investment have payback period of less than 3 years and hence good return on assets	
	a3_p	Incomes from ATMs have had positive impact on bank income margins	
	M	Mobile banking (dependent variable 1)	
	m1_d1	Mobile banking influence reduction of operation costs and hence better return on assets for the bank	0.855
	m2_d1	Mobile banking investment have payback period of less than 3 years and hence good return on assets	
	m3_d1	Income from mobile banking have had positive impact on bank income margins	
	I	Internet banking (dependent variable 2)	
	i1_d2	Internet banking influence reduction of operation costs and hence better return on assets for the bank	0.888
	i2_d2	Internet banking investment have payback period of less than 3 years and hence good return on assets	
	i3_d2	Income from internet banking have had positive impact on bank	

Source: Extraction Method: Principal Component Analysis

Table 4.2: km0 and Bartletts Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.699
Bartlett's Test of Sphericity	Approx. Chi-Square	397.758
	df	36
	Sig.	.000

Source: Extraction Method: Principal Component Analysis

4.3 Factor Analysis

Factor analysis as a method of data reduction was used to extract the three variables, which were used in the correlation and regression analysis. The total variance explained in the extraction process was 81.3%, which is above the recommended 60%

indicating that the extraction process was successful in explaining much of the variance among the variables.

Table 4.3: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.123	45.815	45.815	4.123	45.815	45.815
2	2.269	25.214	71.029	2.269	25.214	71.029
3	.933	10.364	81.392	.933	10.364	81.392
4	.528	5.861	87.253			
5	.358	3.980	91.233			
6	.309	3.430	94.663			
7	.227	2.521	97.184			
8	.167	1.859	99.043			
9	.086	.957	100.000			

Source: Extraction Method: Principal Component Analysis.

Table 4.4 summarizes the composition of the sample by banks, gender and age. Most of the respondents came from NMB followed by NBC with more female representation than male. 23.7% and 25% respectively. Similarly, majority in this category were aged above 50 years (26.7%).

Table 4.4: Descriptive Analysis

		gender		age				
		male	female	10-20	21-30	31-40	41-50	50+
		Table N %	Table N %	Table N %	Table N %	Table N %	Table N %	Table N %
bank	DCB	3.9%	3.9%	1.3%	0.0%	1.3%	1.3%	2.7%
	CRDB	0.0%	6.6%	2.7%	0.0%	0.0%	0.0%	4.0%
	NMB	23.7%	25.0%	0.0%	0.0%	10.7%	13.3%	26.7%
	NBC	7.9%	10.5%	0.0%	0.0%	0.0%	9.3%	8.0%
	DTB	2.6%	2.6%	0.0%	0.0%	1.3%	1.3%	1.3%
	KCB	2.6%	0.0%	0.0%	0.0%	1.3%	1.3%	0.0%
	SCB	0.0%	3.9%	0.0%	0.0%	0.0%	2.7%	1.3%
	AB	2.6%	0.0%	0.0%	0.0%	1.3%	2.7%	0.0%
	ACB	1.3%	2.6%	0.0%	0.0%	4.0%	0.0%	0.0%
	SB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Extraction Method: Principal Component Analysis

The sample was composed more of lower and middle management than otherwise. The work experience was dominated by individuals with five to ten years of working experience and those with lower than one year of working experience (Table 4.5).

		level of management			banking work experience			
		top management	middle management	lower management	less than 1 year	between 1-5 years	between 5 -10 years	over 10 years
		Table N %	Table N %	Table N %	Table N %	Table N %	Table N %	Table N %
bank	DCB	1.3%	3.9%	2.6%	5.2%	1.3%	1.3%	0.0%
	CRDB	1.3%	0.0%	5.2%	1.3%	2.6%	0.0%	1.3%
	NMB	9.1%	22.1%	16.9%	14.3%	10.4%	14.3%	10.4%
	NBC	5.2%	10.4%	2.6%	0.0%	3.9%	9.1%	5.2%
	DTB	0.0%	3.9%	1.3%	0.0%	1.3%	1.3%	2.6%
	KCB	1.3%	1.3%	0.0%	1.3%	1.3%	0.0%	0.0%
	SCB	2.6%	0.0%	1.3%	1.3%	0.0%	1.3%	1.3%
	AB	0.0%	3.9%	0.0%	0.0%	0.0%	3.9%	0.0%
	ACB	0.0%	3.9%	0.0%	0.0%	2.6%	1.3%	0.0%
	SB	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Source: Extraction Method: Principal Component Analysis

(i) To what effent Automatic Telles machines contributes to commocrol bank performance

Respondents were divided on some indicated that ATMs had effects on reduction of operational cost while others disagreed on the same issue. Therefore it was not easy to judge as to whether ATMs had effect on performance based on descriptive analysis alone since views were not unanimous on the issue of ATMs and performance, (Table 4.5).

Table 4.5: ATM Contributes to Commercial Bunk Performance

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
ATMs influence reduction of operational costs and hence better return on assets for the bank	Count	36	2	2	0	38
	Table N %	46.2%	2.6%	2.6%	0.0%	48.7%
ATMs investment have pay back period of less than 3 years and hence good return on assets	Count	24	18	4	8	23
	Table N %	31.2%	23.4%	5.2%	10.4%	29.9%
Incomes from ATMs have had positive impact on bank income margins	Count	22	9	18	0	22
	Table N %	31.0%	12.7%	25.4%	0.0%	31.0%

Source: Extraction Method: Principal Component Analysis

(ii) To what effect mobile banking contributes to commercial bank performance.

Mobile banking was rated to assess its contribution to bank performance. Most respondents indicated that they did not agree to the views that mobile banking has any contribution to performance of banks. They did not view mobile banking as an investment that would reduce operational costs among other advantages listed in Table (Table 4.6)

Table 4.6: Mobile Banking Contributes to Commercial Bunch Performance

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Mobile banking influence reduction of operation costs and hence better return on assets for the bank	Count	21	24	12	13	8
	Table N %	26.9%	30.8%	15.4%	16.7%	10.3%
Mobile banking investment have pay-back period of less that 3 years and hence good return on assets	Count	24	25	10	11	8
	Table N %	30.8%	32.1%	12.8%	14.1%	10.3%
Income from mobile banking have had positive impact on bank income margins	Count	23	24	11	10	9
	Table N %	29.9%	31.2%	14.3%	13.0%	11.7%

Source: Extraction Method: Principal Component Analysis

(a) To what effect internet bunking contributes to commercial banking

The views on internet banking indicated that respondents were divided on whether internet banking has any impact on bank performance based on the indicators in table below. Most of views stood at the margins, namely strongly disagree and strongly agree. Therefore it was difficult to conclude based on this factor on this relationship.

Table 4.7: Internet Banking

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Internet banking influence reduction of operation costs and hence better return on assets for the bank	Count	36	7	6	1	26
	Table N %	47.4%	9.2%	7.9%	1.3%	34.2%
Internet banking investment have pay-back period of less than 3 years and hence good return on assets	Count	28	18	8	2	20
	Table N %	36.8%	23.7%	10.5%	2.6%	26.3%
Income from internet banking have had positive impact on bank	Count	29	7	9	1	29
	Table N %	38.7%	9.3%	12.0%	1.3%	38.7%

Source: Extraction Method: Principal Component Analysis

(b) To what effect mobile phone contributes to customer access

The use of mobile phones was rated to assess the level at which it contribute to customer access to the services of banks. The responds were mixed and highly divided indicating it was difficult to judge the extent to which phones contributed to access, improved level of deposits, increased bank innovation and increased retail customer as compared to corporate customers (Table 4.8).

Table 4.8: Mobile Phone Customers Access

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
use of mobile phones has increased customer access to bank services	Count	21	1	1	0	10
	Table N %	63.6%	3.0%	3.0%	0.0%	30.3%
use of mobile phone has improved the level of deposits for the bank	Count	9	15	3	3	3
	Table N %	27.3%	45.5%	9.1%	9.1%	9.1%
use of mobile phone has improved the level of deposits for the bank	Count	9	5	14	1	3
	Table N %	28.1%	15.6%	43.8%	3.1%	9.4%
use of mobile phone has led to more bank innovations	Count	4	9	8	10	1
	Table N %	12.5%	28.1%	25.0%	31.2%	3.1%
mobile phones have led to more retail customers than corporate customers to the bank	Count	11	4	6	2	10
	Table N %	33.3%	12.1%	18.2%	6.1%	30.3%

Source: Extraction Method: Principal Component Analysis

(c) To what effect internet services contribute to customers' access the service of bunch

The use of internet services was rated to assess the level at which it contribute to customer access to the services of banks. The responds were mixed and highly divided

indicating it was difficult to judge the extent to which phones contributed to access, improved level of deposits, increased bank innovation and increased retail customer as compared to corporate customers (Table 4.9).

Table 4.9: Internet Bunting Customers Access

		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
use of internet services has increased customer added to bank services	Count	16	3	2	2	10
	Table N %	48.5%	9.1%	6.1%	6.1%	30.3%
use of internet services has added to more profitable business avenues to the bank	Count	8	11	4	5	5
	Table N %	24.2%	33.3%	12.1%	15.2%	15.2%
the use of internet service has improved the level of deposit for the bank	Count	7	4	17	0	5
	Table N %	21.2%	12.1%	51.5%	0.0%	15.2%
use of internet services has led to more bank innovations	Count	11	5	4	8	4
	Table N %	34.4%	15.6%	12.5%	25.0%	12.5%
internet services have led to more retail customers than corporate customers to bank	Count	15	3	2	2	11
	Table N %	45.5%	9.1%	6.1%	6.1%	33.3%

Source: Extraction Method: Principal Component Analysis

4.4 Correlation Analysis

The correlation analysis indicated that bank performance is negatively related to internet banking. This finding supported the descriptive analysis in Table above. The result was statistically significant. Thus internet banking is negatively affecting performance, this is an interesting result and one need to probe more into the question, probably through qualitative analysis or other type of analysis which may help explain this result. Similarly not statistically significant. Conversely, but not statistically significant, mobile banking do not have any relationship with bank performance.

Table 4.10: Correlation Matrix

	bank performance	mobile banking	internet banking
bank performance	1	.029	-.593**
mobile banking		1	-.226
internet banking			1

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

4.5 Regression analysis

The regression analysis indicated that the two factors under analysis could only explain 37.2% of variation on the performance of banks (Table 4.11).

Table 4.11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.610[a]	.372	.352	.80981011	.372	18.935	2	64	.000

a. Predictors: (Constant), internet banking, mobile banking

b. Dependent Variable: bank performance

Table 4.12: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	24.835	2	12.417	18.935	.000[b]
	Residual	41.971	64	.656		
	Total	**66.806**	**66**			

a. Dependent Variable: bank performance

b. Predictors: (Constant), internet banking, mobile banking

The Table 4.13 indicates the summary for the regression coefficients. Mobile banking negatively affects bank performance. The results was however not statistically significant. Similarly, internet banking negatively affects bank performance, the result was statistically significant. These two factors resulted in reducing the performance of banks based on the selected sample. More studies need to be done to justify this relationship, particularly a qualitative analysis could be done to try to find out as to why mobile and internet banking have negative effects on bank performance as this is highly unexpected, one would expect that these factors would contribute positively to bank performance, but to the contrary they do negatively affect the performance (Table below). This pattern of relationship is also reflected through graphs and analysis of residuals.

Table 4.13: Coefficients[a]

	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	
(Constant)	.030	.100		.303	.763	-.169	.229					
mobile banking	-.117	.103	-.117	-1.132	.262	-.323	.089	.058	-.140	-.112	.924	1.083
internet banking	-.621	.101	-.632	-6.126	.000	-.824	-.419	-.599	-.608	-.607	.924	1.083

a. Dependent Variable: bank performance

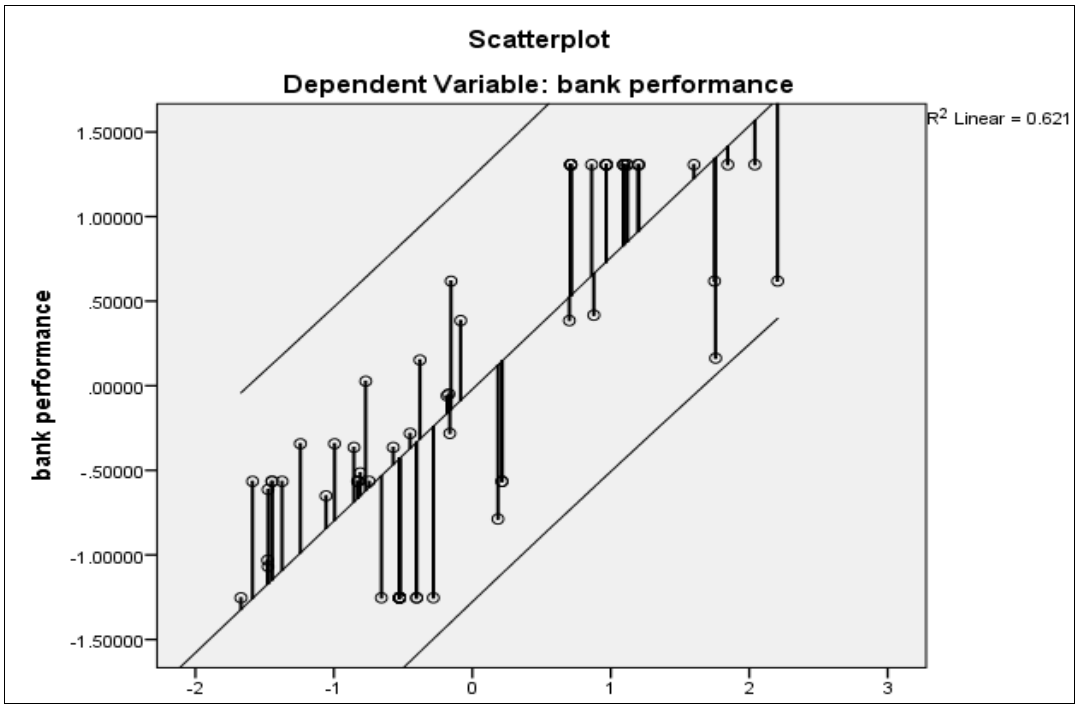

Figure 4.1: Regression Studentized Deleted (Press) Residual

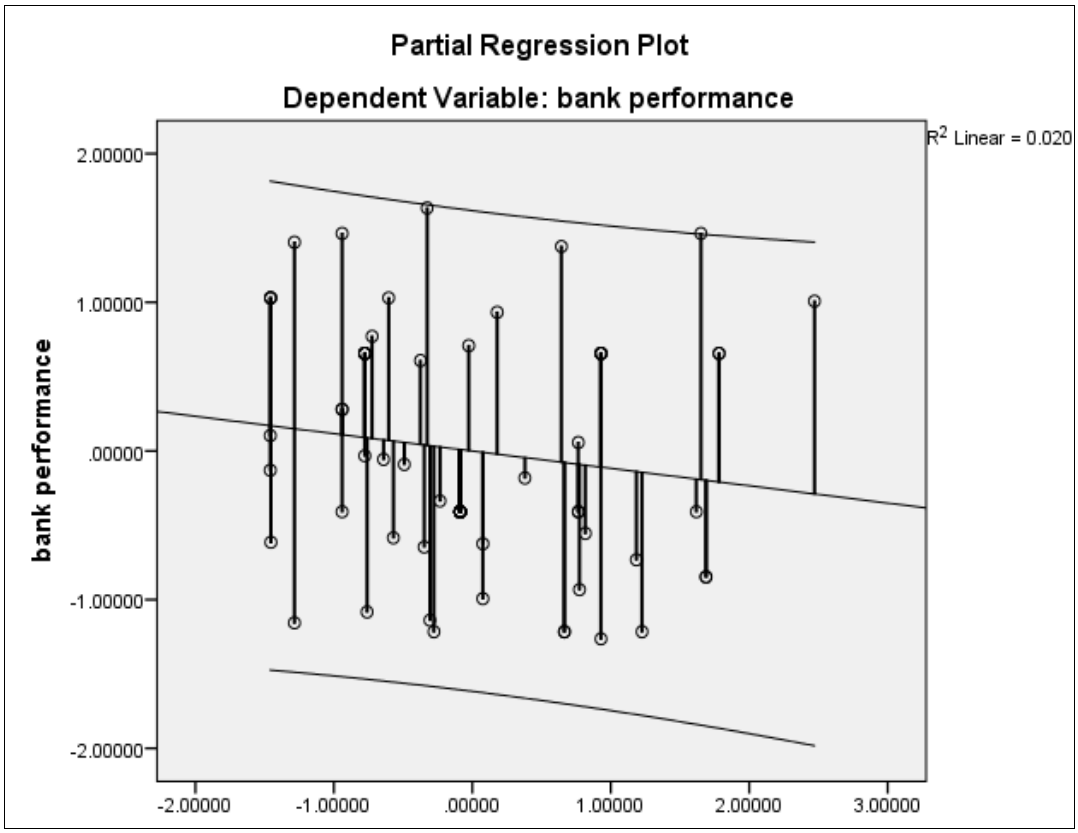

Figure 4.2: Mobile Banking

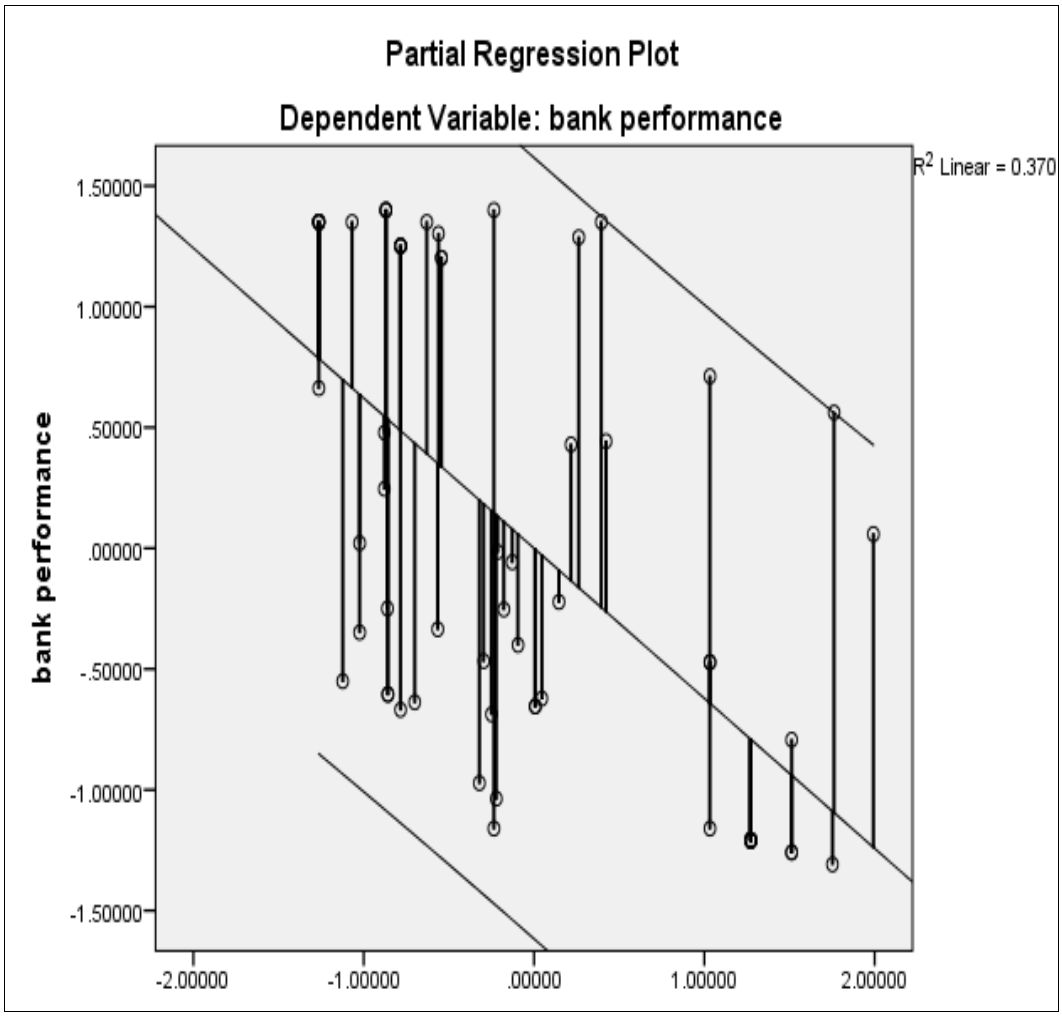

Figure 4.3: Internet Banking

4.6 Discussion of findings

This study investigated the effect of financial innovations of financial performance of commercial Bank in Tanzania. The financial innovations that were studied were Automatic Teller Machine (ATM), Mobil Banking and internet Banking. Financial performance indicators that were studied were evidence from previous studied sunders Lewis and Thom bill (2007) sckgrun (2003) on whether bank innovation influence bank performance showed that there were mixed result. However the degree at which financial innovation effect the profitability of this bank is uncertain. In this study a theoretical framework has been empirically tested denitrifying the relationship

between (ATM), mobile banking Internet banking and bank financial performance. Finding revealed that there is a negative relationship between financial performance of commercial banks and (ATM), Mobile banking and Internet banking respectively in Tanzania. This studies has concurred with copes et at (1990) chandlers and Hanks (1994) in their studies which found that there is a negative relationship between financial innovation and bank performance.

CHAPTER FIVE

CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

5.1 Introduction

The main objective of this study was to investigate the effect of technology innovation on commercial bank performance in Tanzania. In the year 2015, Data were obtained from a sample of 40 commercial bank registered with (BOT), 2015. Data were collected using questionnaires approach and analyzed using (SPSS) and multiple regression analysis to test commercial bank performance and three variables normally Automatic teller machine (ATM), Mobile banking and Internet banking.

5.2 Summaries of Key Results

(i) To identify at which extent Automated teller machine (ATM), contributes to commercial Bank Performance in Tanzania. The results undirected that Automated Teller machine (ATM), did not contribute to commercial bank performance.

(ii) To determine to which extent mobile banking contributes to commercial Bank Performance in Tanzania. This result indicated that mobile banking had no impact on commercial Bank Performance, and the results were not statistically significant.

(iii) To examine at which extent Internet banking contributes to commercial banking Performance in Tanzania. The results indicated that internet banking were not contributing for commercial banking Performance in Tanzania and however the results were statically significant.

5.3 Conclusions

The study has found out that the commercial bank Performance in Tanzania are still not determined by an array factors of technology innovation namely, Automated Teller machine, mobile banking and internet banking. In this respect there is a need of commercial bank in Tanzania, to provide more education to its customer on the use of technology innovation arrays such as (ATM), Mobile banking and Internet banking and others array of innovation. This so because the adoption of innovations by commercial banks has a high potential of improving financial Performance and hence retum better retums to the shareholders. Moreover there is need for the control Bank of Tanzania (BOT), to emphasize the use of technology innovation to its members, because such adoptions enable the commercial bank to obtain income away from traditional sources like interest and assed financing

5.4 Implication

This study contributes immensely to technology innovation in commercial bank and how it can be used to enhance its performance. The research form a bus for better understanding of innovation factors that promotes not only commercial bank but also other bank Performance. Better understanding of innovation factors would help policy makers, and research to strategies and come up with new ways of discovers more technology innovation factors, to be used in commercial bank and improve return to the shareholders.

5.5 Recommendations

The researcher would like to make the following recommendation.

5.6 Area for Furthers Studies

(i) More technology innovation factor to be identified, such as privacy, banking, securities and others.

(ii) More defueled study can be conducted to establish whether innovation in banking contribute, to commercial bunch Performance in Tanzania.

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APPENDICES

Appendix I: Letter of Introduction

Date……

To Commercial Bank

……

Dear Sir/Madam,

RE: COLLECTION OF RESEARCH DATA

My name is Kamoza Ngando and a Masters Project Management Student at the Open University of Tanzania. Currently, I' am carrying out a research on the "Effect of Bank innovations on financial performance of commercial bank in Tanzania. I am in the process of gathering relevant data for this study. You have been identified as one of the collaborators and respondents in this study and kindly request for your assistance towards making this study a success.

I therefore kindly request you to take some time to respond to the attached questionnaire. I wish to assure you that your responses will be treated with confidentiality and will be used solely for the purpose of this study.

I thank you in advance for your time responses .It will appreciated if you can fill the questionnaire within the next 5 days to enable finalization of the study.

Yours sincerely.

Kamoza Oden Ngando.

Appendix II: Questionnaire

This questionnaire is a meant to collect data regarding the effect of bank innovations on financial performance of commercial banks in Tanzania

SECTION A: GENERAL INFORMATION

1: Bank Particulars

Name of the Bank (optional)…….

2: Respondent Particulars.

Gender male ☐ Female ☐

Age Bracket (tick appropriate)

No	Age Bracket	Tick Appropriate
i.	10-20	
ii.	21-30	
iii.	31-40	
iv.	41-50	
v	Over 50	

Table 1: Age bracket (tick appropriate)

Department (tick appropriate)

No	Level of Management	Tick as Appropriate
i.	Top Management	
ii.	Middle Management	
iii	Lower Management	

Table 2. 1: Level of Management (tick appropriate)

Table 2.2: Age bracket (tick appropriate)

How long have you worked in the bank sector (tick appropriate)

No	Period	Tick as Appropriate
i	Less than lyr	
ii	Btw 1-5 yrs	
iii	Btw 5-10 yrs	
iv	Over 10 yrs	

SECTION B: EFFECT OF BANK INNOVATIONS ON RETURN ON ASSETS

This section has statement regarding the effect of bank innovations on return on assets off the bank. Kindly respond with the response that matches you opinion .Please tick as appropriate in the boxes using a tick ( ) or cross mark(x).

No	statement	strongly	Disagree	Neither agree not disagree	Agree	Strongly agree
		1	2	3	4	5

Automated Teller Machines (ATMs)

1	ATMs influence reduction of operational costs and hence better return on assets for the bank				
2	ATMs investment have payback period of less than 3				

	years and hence good return on assets				
3	Incomes from ATMs have had positive impact on bank income margins.				
Mobile banking					
4	Mobile banking influence reduction of operation costs and hence better return on assets for the bank				
5	Mobile banking investment have payback period of less than 3 year and hence good return on assets				
6	Income from mobile banking have had positive impact on bank in come margins				
Internet Banking					
7	Internet banking influence reduction				

	Of operation costs and hence better return on assets for the bank				
8	Internet banking investment have payback period of less than 3 years and hence good return on assets				
9	Income from internet banking have had positive impact on bank				

No	Statement	strongly		Neither agree not		
	Income margins	Disagree	Disagree	Disagree	Agree	Strongly agree
		1	2	3	4	5

SECTION C: EFFECT OF BANK INNOVSTIONS BANK PROFITABILITY

This section has statements regarding the effect of bank innovation on profitability of the bank .Kindly respond the response that matches you opinion. Please tick as appropriate in the using a tick ( ) or cross mark (x).

No	statement	Strongly disagree	Disagree	Neither agree not disagree t	Agree	Strongly agree
Automated Teller Machines (ATMs)						
1	Income from ATMs has high margin hence contributing positively to bank annual profitability					
2	ATMs have low maintenance costs lading to high levels of profitability over their economic					

	lifetime.					
3	Investment in ATMs in mostly motivated by profits to the bank					
Mobile Banking						
4	Income from mobile banking has high margin hence contributing positively to bank annual profitability					
5	Mobile banking has low maintenance costs leading to high level of profitability over their economic lifetime					
6	Investment in mobile banking is mostly motivated					

	by profits to the bank					
Internet Banking						
7	Income from banking has high margin hence contributing positively to bank annual profitability.					
8	Internet banking has low maintenance costs leading high levels of profitability over their economic lifetime					
9	Investment internet banking is mostly motivated by profits of the bank.					

SECTION D. EFFECT OF MOBILE PHONES AND PERFORMANCE INTERNET SERVICES ON BANK

This section has statements regarding the effect of mobile phone services on banking performance. Kindly respond with the response that matches you opinion please tick as appropriate in the boxes using a tick ( ) or cross mark (x).

No	statement	strongly Disagree	Disagree	Neither agree not Disagree	Agree	Strongly agree
Mobile phones						
1	Use of mobile phone has increased customer access to bank services.					
2	Use of mobile phone has improved the level of deposits for the bank					
3	The use mobile phone has improved the					

	level of deposits for the bank.					
4	Use of mobile phone has led to more bank innovations					
5	Mobile phones have led to more retail customers than corporate customers to the bank					
Internet services						
6	Use of internet services has increased customer added to bank services					
7	Use of internet services has added to more profitable business avenues					

	to the bank					
8	The use of internet service has improved the level of deposits for the bank					
9	Use of internet services has led to more bank innovations					
10	Internet services have led to more retail customers than corporate customers to bank					

Thank you for time to pond to this researcher question