EFFECTS OF FINANCIAL INNOVATIONS ON OPERATIONAL EFFICIENCY OF COMMERCIAL BANKS IN KENYA

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DECLARATION

I hereby declare that this project is my own work and effort and that it has not been presented in any other university anywhere for an academic award.

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D61/60560/2013

This research project has been submitted for examination with our approval as the candidate's University Supervisor.

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DEDICATION

This research paper is dedicated to my parents Mr. and Mrs. Owino and family and my sons Bradley and Brandon who have been my constant source of inspiration.

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LIST OF ABBREVIATIONS AND ACRONYMS

CBK:	Central Bank of Kenya
DOI:	Diffusion of Innovation
ICT:	Information Communication Technology
KBC:	Kenya Commercial Bank
KPI:	Key Performance Indicator
PBT:	Profit before Tax
R&D:	Research and Development
ROA:	Return on Assets
ROE:	Return on Equity
ROI:	Return on Investment
T&D:	Training and Development

ABSTRACT

Efficiency of the banking systems is important especially in third world countries as Kenya is among the third world countries because the banking system serves as the back-bone for general financial growth in terms of innovation and financial development. Nearly, all studies on the origins of bank and thrift disappointments find that deteriorating organisations are either not embracing the financial innovations due to the upward trend of the technology or the plans engaged in tackling the innovations are not considerate. So many scholars have established that weakening banks have a tendency of being located further away from the finest practice frontier. Consequently, as well as having large bank, banks headed towards insolvency also have a tendency of facing low operation efficiency. Not a single of the previous researchers has considered the relationship between financial innovations and operational efficiency of commercial banks registered at the NSE (Nairobi Security Exchange). Purpose of this research was to find out the consequence of financial innovations on operational efficiency of listed commercial banks at the NSE (Nairobi Security Exchange). The study established that number of ATMs, number of agency outlets and size of the bank (three independent variables studied) explain a substantial 73.8% of operational efficiency among registered commercial banks at the NSE (Nairobi Security Exchange). This research also concludes the number of ATMs positively and significantly highly influences the operational efficiency among commercial banks listed at the Nairobi security exchange. The research indorses all registered Kenyan Commercial banks, being the controller of their own banking innovations and establishments to reaching out the considerable population, they should consider strategies that will not only benefit the banks in terms of population and popularity but also consider the profitability such that the operational efficiency is enhanced. Management of commercial banks should militate against Moral hazard risks when advancing its number of ATMs/ number of agency outlets taking into consideration that the size of bank might play a very minimal role in the operational efficiency . This can be achieved by good strategic plan without necessarily setting out various plans in the name of profitability. Even though banking sector has experienced competition at an increasing level with time, policies and regulations need to be enforced to help control and still encourage competition in the financial division but not only competition but also the strategies that makes the respective commercial banks stands unique in its operations and market penetration. The policies should also be accompanied with actions to encourage the growth and brand of minor and average sized banks in a proposal to improve their capability to enter the market and also enjoy the financial innovations techniques in order to disrupt market power by some banks.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Within a dynamic, intense and all-inclusive competitive environment, the key point of competition is the innovation of new consumable goods, services and corporate structures. In most cases, invention is only the utmost significant element of competitive advantage enabling an organization to apply somewhat exceptional particularly its rivals lack. Grundiche (2004) discussed that for a firm to participate effectively in an active and competitive business environment and accomplish the set objectives with respect to cost-effectiveness, bulk of sales and big market share, it should consistently invent products and lines of product to satisfy the continually shifting desires of consumers.

The expanding improvement of Kenya's area of banking has encouraged many people to gain access to investments especially those without access to monetary amenities, due to introduction of new technologies such as cell phones and the ATM. As a result, users have benefitted because these amenities are easily accessible. Quantity of bank branches has increased in the preceding decade, with quite a number of this change originating from new entrance into the market. The most noted among the new players, M-PESA, has swiftly changed the Kenyan monetary sector by simplifying the way that Kenyans send and receive money (Foster and Heeks 2013).

Girardone and Molyneux (2006) viewed that payment systems reveal the most distinctive innovation in the current banking activities which include the use of comprehensive computerised networks for furnishing and distribution of several financial transactions

and undertakings. The main cases of such include; credit cards, automated teller machines, internet and mobile banking. Hence, monetary institutions today are at crossroads in their amenity offerings as new authenticities interrupt the existing state of businesses due to the continuously growing economy which in turn raises the consumers' assumptions of monetary services (Asekun, 2005).

1.1.1 Financial Innovation

The most generally and commonly used description of financial innovation is that presented by Frame and White (2004), once having scrutinised the essential elements of the monetary system, considered financial innovation as "an invention which lessens expenditures, decreases uncertainty and/or gives enhanced business commodities or device which fulfils consumers' wants and needs and/ expectations". Technological financial inventions is collectively referred to as; innovative goods, innovative services, innovative "manufacture" procedures, or innovative administrative structures.

Irechukwu (2000) highlights certain banking services that have been reformed using ICT (Information and Communication Technology) to be comprising of opening new account, consumer command of own account, and/or operation processing and recording of consumer transactions. Technologically applied consumer service mechanisms has been enabled through ICT as a result of potential customers filling in and submit their account opening papers online. This helps clients to approve respective account identification numbers plus get guidelines on how to possess the accountholder's banking materials. According to Laudon and Laudon 2001, ICT manages the programming and the hardware which connect different physical components of the computer and exchange information between different end-users. Internet and Mobile Banking, EFT and EDI (Electronic

Funds Transfer, Electronic Data Interchange), Credit and Debit Cards and Automated Teller Machine (ATMs) are among the few items (related to ICT) being used in the banking business.

Disruptive innovation is a development that creates a new business by applying an alternate arrangement of qualities, which eventually (and abruptly) overwhelms the existing business. With reference to Christensen 1997; Hill and Jones 1998; Tidd et al 1997; Trott 1998; Veryzer 1998, advancements can be considered as a ranger classified since growth to innovative. This is further grouped in twofold categories: transformative (advancements which enhance execution of set up goods, amenities or corporate models) and Revolutionary (inventions lie at the centre of business undertakings and fortune establishment which aid to be principle of upcoming inventions, goods, business service plus activities.

1.1.2 Operational Efficiency

Within banking, operational efficiency is well-established in addition to considered within various scopes. These consist of: scope effectiveness, which states the connection among average cost and generation of varied output assortments; scale proficiency, which states bond among the equal of production and the average cost; and Operational efficiency, a wide-ranging principle occasionally mentioned as x - efficiency, checks on abnormality from the cost efficient leading edge that signifies supreme achievable output in place of a specified equal of input. With reference to numerous definitions, inefficiency is therefore a multidimensional model with several implications dependent on the point of perspective in which it is applied (Leibenstein, 1966).

The regularly utilized relation that financiers apply to gauge the inclusive cost efficiency (operational efficiency) for institution consists of cost/income ratio (expense/income ratio otherwise, as frequently named in US, the efficiency ratio). This broadly states entire operating cost acquired by an organization as a fraction of the organization's operating income. The cost of maintaining the bank will incorporate support of prevailing structures or working procedures which remain regularly not at all incremental quality towards a business therefore they have to remain commoditized then reserved less to surge efficiency. Cost of altering the financial institution might incorporate charges for fresh goods, or different distribution networks for present consumers. These costs will be able to remain connected towards revenue that is generated (Kumbhakar and Lovell, 2003).

Kenyan banks are in fierce struggle towards enhancing competence in addition change investment services distribution hooked on linkages covering outdated divisions, robotic cashiers, telephone and internet banking. Since not any layout is of existent to monitor the respective change, it has been tested via process reengineering, shutting down underachieving outlets in addition to presenting innovative plus cost-effective banking methods (Kumbhakar and Lovell, 2003).

1.1.3 Financial Innovation and Operational Efficiency

Financial Innovation–performance relationship is context dependent. Certain financial improvements mainly focus on enhancing the current products, processes and business models in an existing market while other financial developments disrupt the present markets as a consequence of introducing new products, processes and business models to a target on the new market. Factors such as the age of the firm, the sort of innovation and the cultural context affect the effect of innovation on firm performance to a substantial degree (Tidd, 2001).

With reference to Harker and Zenios (2000), it’s stated that technological advancement encourages more competitive force. Primarily, it opens up new conveyance channels, keeping in mind that those are not more cost effective for the organisation; hence customers get the chance to rely on upon them and demand access. Nevertheless, before the bank branch was the main channel for the dispersion of financial services, we see today an assortment of channels eroding the branch's dominance. The economies of scale that lead to more incorporated automation cause more economies of scope effects. As financial establishments – in concurrence with all other retail services – understand that consumer satisfaction and loyalty lead to a fixed progression, they go for increasing the share of customers' wallets that they are servicing. With stage automation, a representative can get a single view of the whole customer relationship; economies of scope can be made when a firm offers appropriate product mix to support its customer base.

Gale and Allan (1994) opposed advancement to remain noticed by means of: presentation of original economic devices and/or services and/or repetition, launching of original fund expenditures, discovering new wellsprings of funds, launching of original developments and/or methods towards handling everyday processes, and/or setting up an innovative organization; with every one of respective modifications to be a piece of present economic organisations, rise of remarkable development of innovative economic organisations and marketplaces. Financial advancement refers to making before promoting innovative economic devices, also inclusive of first-hand economic know-hows, organisations and marketplaces (Lerner and Tufano, 2011). The advancements are in some cases separated into products and/or procedure variations, through merchandise advancements demonstrated through innovative unoriginal agreements, innovative commercial

securities, or first-hand types of joint speculation goods, plus processes enhancements characterised via first-hand ways for disseminating securities, handling dealings, and/or valuing trades.

1.1.4 Kenyan Commercial Banks

Profitable banks take part in an important and active part within cost-effective advancement for a nation like Kenya. In the event that the banking scheme in a nation is fruitful, proficient and disciplined it enables quick development in the different sectors of the economy. Amid the quarter finished 30th September 2015, the sector contained 41 profitable banks, one home equity loan finance company, twelve micro-finance banks, eight agent workplaces for overseas financial institutions, eighty six overseas interchange agencies, fourteen cash payment suppliers plus three credit position agencies (CBK 2015). With reference to companies act, CBK Act Cap 491, the finance Act Cap 488 plus micro-finance Act 2006 stay as primary controllers of investment industry within Kenya. These Acts applied alongside sensible procedures stay supplied through CBK. Around 1995, trade measures remained elevated subsequently liberalisation of investment within Kenya. Nowadays, financial transactions remains recognised in place of advanced investment. Economic innovations related to high-tech transformation partakes to completely improve investment attitude. This is further adjusted through competition within the Kenyan banking industry (Kimotho, 2013).

Altering the trade setting inside the financial transactions scheme made extra advancement within goods, processes and marketplaces. Data innovation partakes to offer growth in original advancements within merchandise planning in addition to merchandise conveyance within financial transactions and investment trades with client facilities in

addition to consumer happiness being their principal effort. Up-to-date investment area partakes to engineer a great deal of activities which are positioned towards providing improved client benefits that enable assistance of original advancements. Accessing financial services via internet partakes to rise by way of a key asset aimed at attaining advanced productivity, regulation of processes in addition to decrease of charges by means of substituting paper centred plus personnel demanding approaches to computerized forms accordingly prompting higher output and cost-effectiveness (Malhotra and Singh, 2009).

Kenya's financial area has experienced vast transformation in the most recent years. The monetary base has gradually come into spot, the business sector reaction has been effective and the financial action has upheld development. In the last six or so years, we have seen barriers of entry to the financial sector, huge decrease in cost of small scale accounts, the launching of new ideas focusing on lower sectors of the populace and expanded branch system of branches across the nation (Njuguna, 2011). Central Bank of Kenya has offered opportunities to creative arrangements giving more attention to the access of financial services through mobile telephones. Utilization of telephones from individual to individual, individual to business, business to individual and ATM transactions have progressively taken off and numerous banks are putting forth such administrations. Agent banking is another advancement used while accessing advanced financial services. Non-bank outlets are transformed into financial service providers. By 2011, there were 8,809 mediators (agents) permitted, leveraging on mobile telephone money agents (CBK, 2011). These specialists have created a leading edge on financial inclusions.

Financial advancement in specific banks has resulted to increased revenues since the beginning of the year 2000. For instance, the presentation of EQUITEL & M-KESHO by Equity Bank and Agency banking services by Cooperative bank, Equity bank and Kenya Commercial Bank. This can be accredited to outlook change from the past results of enhanced technologies to the present indigenous product advancement in the business. These monetary advancement have ended up being disruptive in the sense that the products or services begin in simple applications at the bottom of the market. Later on, it constantly moves up the market as result of applying technological ideas to improve products or services, in the end established competitors are displaced (Naughton, 2014).

1.2 Research Problem

Technological advancement has totally redesigned various organizations and enterprises and made organizations fizzle while others prosper. According to Christensen and Raynor 2003 numerous organizations need to intermittently participate within courses of advancement on behalf of enduring existence. Technological advancement partakes to draw abnormal measures for consideration beginning with researchers in addition to specialists to see what already has been composed about the impacts of disruptive technological advancement, as part of my literature review. The impacts are regularly depicted through illustrations and the emphases are on issues such as definitions, causes of disruptive technological advancement and its classification, its projection then later solved. Not any broad exploration on general impacts of technological advancement within industry (Danneels, 2004).

Kenya’s access to financial services facilitators has realised numerous progressions since the start of e-banking. Currently, customers of listed institutions that provide access to financial services have effective, quick and advantageous services which are delivered through technological advancement while a few question the capacity of making estimates of inventions ahead of time (Thomond and Lettice, 2002). Economic changes in addition to liberalisation ought to enhance productivity within intermediary progression. Diversification will decline after some time as liberalisation will be achieved also the economic segment advances (Ndung'u and Ngugi, 2000).

Financial technological advancement predominantly electronic banking money has made access to financial services easier globally. Venansius (2014) researched on utilization of technology to improve on service. He reasons that innovation is an instrument that ought to be abused to upgrade service conveyance in institutions that provide access to monetary services. It makes an upper hand as well as improves business development and steadiness. DeYoung et al. (2006), conveyed a study on how the internet influences productivity and execution at facilities that provide access to financial services. The study uncovered that online banks turned out to be more profitable (ROA and ROE) with respect to their brick and mortar rivals somewhere around 1999 and 2001. Internet appropriation enhanced bank profitability, especially through improved incomes from deposit and service charges. In the universal field, the majority of the studies are on impact of electronic banking on business banks financial performance. Studies on impacts of financial technological advancement on execution attributes specifically operational efficiency is wanting.

Past studies done in Kenya, on electronic banking, incorporate impacts of telephone and internet investment on economic presentation in financial institutions (Okiro and Ndung'u, 2013). Aduda and Kingoo (2012) researched the connection among Automated Investment in addition to Economic Presentation amid Kenyan Commercial then reasoned about how an optimistic connection exists between electronic investment as well as presentation. Nonetheless, the study had an exploration crevice since it didn't stress on the ranges influenced by the technological advancement particularly on operational proficiency. Ongwen (2015) focused on a study on impacts of product innovation on financial performance of institutions that provide access to financial services. The author presumed that the banking area ought to have the capacity to determine the technological background of the majority of their consumers before endeavouring into the use of advanced inventions. Be that as it may, the study did not attempt to link the levels of product innovation with operational efficiency of facilities that provide access to financial services. Owing to the research crevices highlighted above, there is no broad examination on the general impacts of financial innovation on operational effectiveness. This study therefore responds the query; what are the impacts of financial innovation on the operational efficiency of commercial banks in Kenya?

1.3 Research Objectives

The research examined impacts of financial innovation on operational efficiency of listed Kenyan commercial banks.

1.4 Value of the Study

Innovation theory has made an enormous effect on administration practices and stirred a lot of argument inside the academic world. Numerous as the studies may be, the dispersed and contradictory nature of the literature on financial advancements in the most recent decade may signify a condition of uncertainty for future consideration, consequently requiring an exhaustive study at this point.

The study will aim at assisting banks' administration to essentially re-examine the best way to utilize technological advancement in setting up the best inventions keeping in mind the outcome to drastically enhance customer service, reduce operational costs and get to be world class contenders. This study will give more understanding on the consequence of financial innovation on operational efficiency by identifying and examining the impacts of costs of product, processes and institutional innovations as a degree of the commercial banks' of operational efficiency. This will offer more insight to the management of institutions that provide access to financial services with more understanding on the significance of financial technological advancement not limited to the institution's operational efficiency and the economy at large.

This study will also increase knowledge on the concept of financial product, process and institutional innovation and give more empirical discoveries on the relationship between financial advancement and operational efficiency. This will give more precise material which will be of quality to examiners, scholars and professors. This study can similarly be used as a base of further research in lecturers in the area of financial advancement and deepening in developing nations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The section audits current writings that is associated with the study variables. The reading pays attention to financial innovation impacts on operational efficiency of Kenyan commercial banks. This chapter shows a brief overview, the hypothetical background and conceptual framework, significant determinants of operational efficiency from previous studies, empirical evaluation, a synopsis of the section and a conceptual framework.

2.2 Hypothetical Review

Dawson (2009) defines hypothesis as well-organized interpretation of connection amid occurrences as well as gives summarized description of event(s). With reference to several writings of financial technological developments, it appears to be an extensive variety of hypotheses that is created thru different researchers. The primary hypothesis of this study is Disruptive Innovation Theory. Different philosophies identified with the study comprise of: Diffusion Innovation Theory and Schumpeterian Theory of Creative Destruction. These hypotheses are described further below.

2.2.1 Disruptive Innovation Theory

Disrupting inventions seem to be business commodities, by means of corporate representations, which familiarise presentation sets inferior in comparison to typical consumers' assessment. During the course of progression of disrupting advancement, only niche segments were served. Both the disrupting invention and the recognised offerings improve; nonetheless, the disrupting invention improves sufficiently afterwards to fulfil the desires of the typical consumers and in time replaces the recognised offerings and occupants that surpass the expected performance (Christensen, 2013).

In the range of electronic retail banking, there has been a continuous question among studies with respect to the disrupting features of the new institution models in regards to the Internet. In their book "The innovation solution", Christensen and Raynor state that "access of financial services through the internet must be conveyed as a supporting innovation with respect to the institution models of retail banks" (Christensen and Raynor, 2003).

The disrupting advancement is presumably the most significant advancement hypothesis of the prior decade. The essential conception driving it spread quickly such that by 1998, one year after the hypothesis was published, society was utilizing this terminology by avoiding to mentioning Christensen's applications of the term when he explained it in his book "The Innovator's Dilemma" while he was an instructor at Harvard. Disruptive Innovation today, was launched initially in 1997 when Christensen's book (The Innovator's Dilemma) was published. With reference to the manuscript of the Christensen, the Harvard instructor, he researched possibilities of a few advancements which remained essential and strengthened occupant-position within specific business, in spite of past representations (Clark model) could foresee.

2.2.2 Schumpeterian Theory of Creative Destruction

Schumpeter (1928, 1939) who considered advancements to be unending storms of inventive obliteration that were vital strengths driving development rates in an entrepreneur framework. Schumpeter's reasoning advanced over his era to the degree that a few researchers have separated his initial speculation where advancement was to great extent a subject to remarkable people willing to go up against exceptional risks as "a demonstration of will", i.e. business creative thinkers, from his later feeling that

acknowledged the character of substantial organizations in sorting out and being supportive of innovations. This brought about his accentuation on the part played by oligopolies in advancement and which later was falsely seen as the main role of his work. (Freeman, 1994).

Intermittent in addition to disrupting feature experienced by high-tech alteration within entrepreneurship causes indistinguishable blend of uncertainty plus durable evolution (Schumpeter, 1928). He was not a high-tech determinist but rather acknowledged the social and collective energies that assumed key contributions in his repetitive procedure of industrialised transformation. Schumpeter contended that business people, innovators or research and development engineers within substantial companies, welcomed new benefits with their inventions. Thus, gatherings of copycats, pulled in by super-benefits would begin an influx of venture. Overall profit margins would be disintegrated for the advancement. Besides, Kondratiev cycles is viewed to arise when the cycle of business is started before an economy is equilibrate. For all his knowledge on the contribution to advancements, Schumpeter still did not, by any stretch of the imagination, clarify the wellspring of innovation. He could however indicate its significance and its part in timing financial cycles without addressing its source. This somewhat strangely permitted Keynesian financial matters to contend that levels of venture into business were the reason for advancement.

It was not until the 1960s that business analysts would start again to scan for the wellspring of advancement. The significance of advancement was highlighted by scientists like Abramovitz (1956) and Solow (1957) who could show how minimal neoclassical financial aspects could clarify. In view of information on the United States'

economy from 1909-1949, Solow demonstrated that exclusive 12.5 percent of the expansion of per capita yield could be followed to expanded utilization of capital. This cleared out a shockingly expansive 87.5 percent remaining that Solow attributed to specialized change. Romer (1986, 1994) repeats Solow's perception and proceeded with the call for advancement scholars to adopt the process of invention inside their models. To this end, the work on advancement that rose up out of the foundation set by Schumpeter has been focused on the making of development and its resultant dispersal between firms, enterprises, and regions. The Schumpeterian Theory is significant in light of the fact that new innovation substitutes old innovation which is better on the grounds that new innovation is better and increases the value of the adopter.

2.2.3 Innovation Diffusion Theory

Rogers' (1995) Diffusion of Innovation (DOI) hypothesis is a recognised model applied in information frameworks exploration to shed light on client appropriation of new technologies. Rogers describes diffusion as 'the process whereby advancement is discussed through definite networks after some time among the individuals from a communal gathering' (Rogers, 1995).

In line with DOI, the rate of distribution is influenced by the advancement's relative advantage, complexity, similarity, trialability and recognisability. Rogers (1995) describes relative advantage as 'how much an advancement is viewed as being better than its predecessor'. Multifaceted nature, which is practically identical to TAM's apparent simplicity of use construct, is 'how much the advancement is seen by the potential adopter as being fairly difficult to utilize and get it'. Compatibility alludes to 'the degree to which a development is seen to be perfect with existing qualities, convictions, encounters and

needs of adopters'. Trialability is 'how much a thought can be experimented with on a constrained premise'. Finally, discernibleness is 'how much the consequences of an innovation are unmistakable' (Rogers, 1995).

The diffusion hypothesis is applicable on the grounds that it clarifies the motivation behind why institutions that enable access to financial services embrace technical advances. One reason why banks receive specialized advancements is aiming to achieve relevant competitive advantage. This implies banks that embrace specialized advancements have moderately better financial competitive advantage than the individuals who don't.

2.3 Determinants of Operational Efficiency of Commercial Banks

A few variables noted by Kireyev, (2001) may clarify the lack of operational efficiency in the financial division. These include increase in prices of goods or services, credit facility rates, and swapping scale which brief monetary development associations to have no way out yet attempt to minimize variables with a specific end goal to grasp money related advancements. Some of the determinants of monetary execution in business banks are discussed below.

2.3.1 Financial Innovation

The previous couple of decades have seen enormous high-tech advancements. The development of new invention encourages economic invention through reduction of fees for original economic facilities and instrument(s) provisions by utilizing PCs and telecommunication. The fast improvement of innovation in the financial sector, the presentation of new correspondence and transmission frameworks also accelerate data streams (Brynjolfsson, 2000).

According to Damanpour and Gopalakrishnan (2001), hi-tech advancement in financial markets includes new components brought into a company's invention businesses aimed at manufacturing goods and/or consumer service provision. Motivation behind advancement demonstrations include: service conveyance unit charge reduction, rise in imbalance, improvement in process, decline within conveyance period plus increment within working adaptability. Cohen (1989) claims that innovation has operated in significant approaches to achieve this. To begin with, significantly charges reduction plus extended opportunity for telecommunication create a universal economic marketplace.

2.3.2 Competitive Environment

Financial technological advancements are generally key to help with penetration into the markets (new and existing). Organisations bid original merchandises since it’s money-making. The current arrangement seen in economic businesses, attentiveness levels in addition to rivalry within investment area, effortlessness entrance, cost-effectiveness, advancement degree and specialism amongst various sorts of securities, collective business resources accessibility decisions, as well as the collaboration of demand versus supply by means of controls influences economic innovation. Variations within the worldwide economic setting plus cumulative coordination of local also universal economic marketplaces trigger economic advancement (Summers, 2000).

Ho (2006) claims that competition has risen between commercial banks and financial institutions, for example, investment banks, insurance agencies, pension organizations and many more. In addition, in this manner the improvement of financial globalization has heightened the requirement for altering the present structure and the state of financial systems. The accomplishment of financial institutions relies on free market economy

given that the important existing structures of financial industry are accessible. These are the levels of focus, ease of entry, competition in banking sector and financial advancement instruments.

2.3.3 Regulation

Regulation is responsible for the acknowledged practices of firms in their selected exercises and is driven towards decreasing the danger of systematic failure therefore staying away from the disruption brought on by financial breakdown. With reference to Chew (1997), it is expressed that the primary motivation to advance is a need to avoid official rules and controls. These require financial institutions to fulfil capital sufficiency necessities, spread their risk, embrace for the most part acknowledged accounting guidelines, draw in professionally appropriate managers, report their actual financial position and be liable to successful supervision.

Directors, managers and financial institutions are required to reduce adverse selections and detailed conduct rules to decrease against moral hazard. The objective of sensible rules is to restore stability without including efficiency. The degree and success of designing sensible rules based on market mechanism which do not bias competition and financial behaviour remains a paradox (Claessens & Kose, 2013)

2.4 Empirical Review

The importance of money related advancement is broadly acknowledged. Numerous researchers, emphasised significance witnessed from business commodities in the financial field (Miler, 1988 & Merton, 1992). Experimentally, one researcher demonstrated for example, every communal contributions trendy within 2000, on a dollar

weighted-basis, 18% contained safekeeping which did not exist within 1994 (Tufano, 2002). Advancements aren't only imperative to companies within economic service business, they affect different organizations; e.g. empowering to generate wealth of large sums as well as trying to be cost-effective in all aspects of high-tech businesses.

Another research on impact of financial innovation on the economic presentation in Kenyan commercial banks he had the number of populaces in the study comprised of all (by then) 43 investment firms in Kenya. Essential information for the study remained collected within majority banks i.e. 32 banks reacted to the survey questions well and auxiliary data was gathered using publication, yearly financial reports of commercial banks on the internet and the bank supervision yearly report from 2006-2012 which was composed by CBK. Primary discoveries Zewdie (2013) study were financial advancements such as ATM cards, Master cards, telephone banking and agency banking demonstrated a positive outcome on execution of commercial banks, however, prescribed for future examinations outside financial measures in the study as innovation keeps on entering the market.

Nyathira (2012) surveying the impacts of financial innovation on commercial bank's financial performance in Kenya as at 30th June 2012. She examined every one of the 43 enlisted commercial banks around then for a period of 4 years. She utilized auxiliary data from distributed CBK's reports produced yearly whereby the autonomous variable was financial innovation one of a kind to commercial banks while dependent variable was joined financial performance of all banks. She discovered that financial advancement adds value to and is definitely connected to profitability in the financial sector especially that of commercial banks.

Mwangi (2011) examined the connection among a selected economic invention in addition levels of income within Kenyan commercial banks; he concentrated on 44 enrolled commercial banks by the CBK in the period 2005 to 2010. He applied linear progression whereby Innovation was an autonomous variable and profitability as the dependent variable; he likewise applied primary data as a part of the type of survey questions and review of secondary data. He discovered that there is a noteworthy connection among adoptability within diverse economic advancements as well as levels of income within Kenyan commercial banks.

Savings within Nigeria has progressively relied upon distribution enhanced by IT (Information Technology). Spending plan for investment through a long shot bigger in comparison to some industry in Nigeria as illustrated by Ovia (2000). The researcher claimed internet framework encouraged online investments within Nigeria. This is witnessed in some of them creating online portals. Ovia discovered currently investment firms offered clients access to personal accounts within somewhat outlet regardless of the entitled outlet assigned to any respective consumer. Cashless transactions were achieved in our community today.

Nonetheless, according to Gallouj, (2002); Howells and Tether, (2004); Miles, (2004) a lot of studies that relate to advancement concentrated on industrialised businesses but expanding consideration is currently diverted to advancement within service-driven businesses of late. Sebastian and Lawrence (2004) in their paper titled "Client Focus in Banking Services" had insisted on significance of management of customer relationship. The goal of the banks ought to hold the existing customers and obtain the new clients. Keeping in mind the end goal is to increase the value of the service offered, the banking

industry needs to productively and adequately use the innovation with an eye on the cost of product and the services advertised. In order to achieve consumer needs, the modern banking ought to incorporate innovation and apply vigorous advertising systems that would enable banks to maximize profits through consumer satisfaction. In a financial sector with fierce competition, furnishing the consumers with quality goods and services is the paramount way to achieve complete supported consumer satisfaction.

Most research about troublesome advancement concentrated on versatile and telecom businesses. For instance, as of late, Boye and Bäckman, (2013) found out that the versatile telecom industry speaks to 2% of world GDP, and the portable system administrators involve 74 % of the income. The portable systems administrators can utilize their appraisal structure when new problematic advancements jump out at comprehend the impacts, and consequently understand their chances and conceivable outcomes to minimize hazard. They went on and expressed that hypotheses on troublesome advancement contend that problematic development diminishes open doors for existing players. Boye and Bäckman (2013) have possessed the capacity to affirm that troublesome development can equally expand open doors for some current players, as either complements or other people who understand the impacts of a problematic advancement and settle on right vital choices as a consequence.

The exact writing examining SBCs concentrated considered causes of investment firm selection as well as dispersion in relation to innovation, and additionally in what way SBCs influenced loan accessibility. Various scholarships measurably causes of probability and scheduling substantial investment firms' selection for SBC’s. An essential part for

authoritative structure in the selection choice: managing an account association with less bank sanctions and more bank offices will probably embrace furthermore to receive sooner as indicated by Srinivasan, and Woosley (2001) and Akhavein, Frame, and White (2005). This suggests expansive saved money with a more "brought together" structure will probably receive SBCs. According to Berger, Cowan, and Frame, 2007 the utilization of the SBCs innovation still gives an impression of being, for the most part, constrained to huge saving money associations. In any case, one late study proposes that little banks now regularly make utilization of the customer FICO rating of the primary firm's proprietor.

According to Agboola, (2002) Information Communication and Technology supplies within managing an account business in numerous creating and third world state incorporate ATMs, Debits & Credit Cards, Internet & Telephone Banking, MICR, EFT & EDI (Electronic Funds Transfer & Electronic Data Interchange). As indicated by Yasuharu (2003), usage of information technology and correspondence organizing has acquired insurgency the working of investment firms as well as money related establishments. There is contentment regarding sensational auxiliary variations visible within stock on behalf of money related administrations business like an aftereffect portrayed by electronic transformation.

2.5 Conceptual Framework

The hypotheses have given us a wide perspective of potential impacts of financial advancement on performance particularly operational efficiency. As illustrated in figure 2.1 (beneath), the financial advancement aspects remarkably product innovation (number of ATMs), product innovation (number of agents) and bank size (total assets) are expected to impact operational efficiency of the commercial banks as simplified by Harker and Zenios (2000).

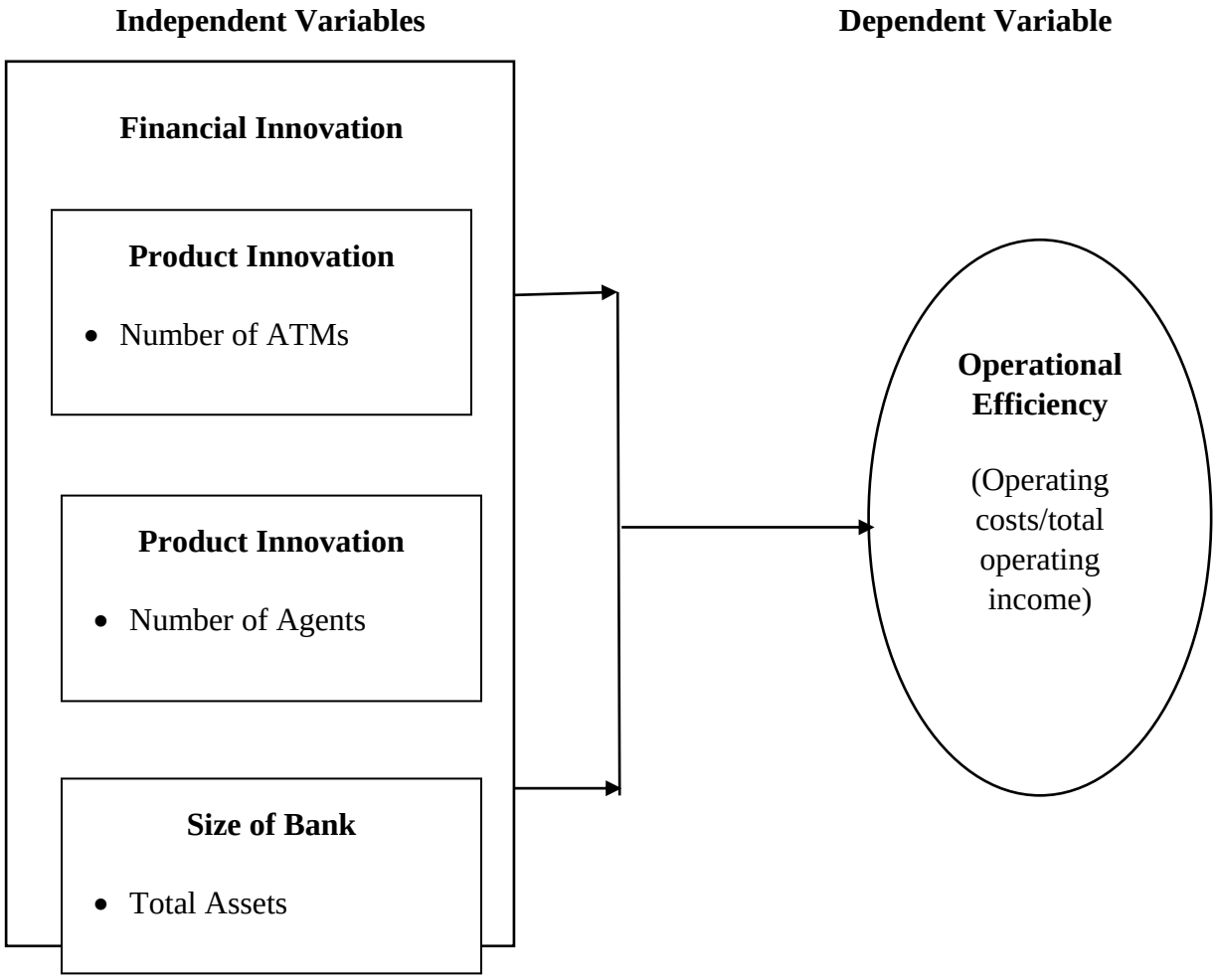

Figure 2.1: Conceptual Framework

2.6 Literature Review Summary

The synopsis of literature review stresses that different realities of financial firms have been attempted in relations to financial innovation. Cost of production that prompts increment in profits facilitated by advancement in financial firms. Notwithstanding, a few of financial institutions are controlled by the current government directions that occasionally throttle advancements. The literature content is expressing kinds of

advancements enabling financial institutions to raise their competitive power, enhance their risk management abilities and better fulfil the necessities of their clients and market prerequisites. Hypotheses of development have been discussed in the literature review, in this situation, Disruptive innovation theory, Schumpeterian Theory of Creative Destruction and Innovation Diffusion Theory. A few studies both universal and local have been evaluated in the empirical studies.

Most scholars from various writers have been talking about impacts of financial advancement. The impact is regularly illustrated by through illustrations and the attention driven towards problems to be explanations, anything that affects hi-tech invention as well as in what way to arrange, anticipate or become taken care of. As this study demonstrates, albeit a lot of effort has been put to find out more on attributes portrayed by consumers of economic advancement in addition to well-being suggestions, how and why financial advancements are initially developed, little is thought about the consequence witnessed as a result of economic advancement towards operational productivity of Kenyan profitmaking investment firms thus remaining a significant area for further research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This part illustrates data collection and analysis approaches that will be applied as a part of the study. In particular, the section shows the research design, study populace, size of a sample, information gathering techniques and investigation actions, data analysis as well as presentation of consequences practises among others.

3.2 Research Design

Design of a research gives an outline which binds any given project. A design is applied to build a research, in a way that main project sections that incorporate group samples, measures, programs, and methods of assignment for task that co-relate so that focal exploration query is addressed (Denvir and Millet, 2003). The research embraced an expressive (descriptive) research project which biases planning the impact of financial advancements on operational efficiency. This research ought to set up a good association among twofold classes of variable. Descriptive project-design is a project which attempts in the direction of depicting precisely qualities illustrated by specific single, circumstance otherwise group (Kothari, 2004). Hence, descriptive review was applied in this research.

3.3 Population of Study

Populace is categorised by a group comprising of persons/people, facilities, elements as well as occasions, various things in groups or family units undergoing explorations (Mugenda and Mugenda, 2003). The populace contains every one of the 42 business banks in Kenya as at 30th September, 2015 which have been

operational since 2011 to around 2015 (CBK 2015). This period is regarded as sufficiently long to give adequate variables to help in establishment of impacts of economic innovation on operational efficiency of investment firms in Kenya. This period is picked so as to provide conclusive outcomes as well as mirror present development. Not any selection is complete because of minimal populace mass. The research applies an evaluation whereby all listed banks will be examined as a part of the study.

3.4 Data Collection

Secondary investigation information consists of information gathered utilizing subjective information analysed in writings from different scholars (Dawson, 2009). The research will be enabled through historical information application from economic innovation as well as operational efficiency for a timeline of 5 years (2011 towards 2015) giving information on behalf of economic advancement, process advancements and organization restructuring. Information for operational efficiency will include operating cost and operating income provided by Central Bank of Kenya's yearly investment firm's management accounts and also investment firm's financial accounts/reports produced yearly.

3.4.1 Operationalization of Study Variable

Variable	**Measure**
Operational Efficiency (Y)	Total operating costs/ Total operating income
Product Innovation (X_1)	Number of ATMs
Product Innovation (X_2)	Number of Agents
Bank size (X_3)	Total bank assets

3.5 Data Analysis

Normal Least Square data analysis technique will be applied to evaluate multiple regression equation. Information analysis will be done utilizing Statistical Package for Social Sciences (SPSS) form 21 analytical tools. Information will be coded to enable computer input, then, summarized by use of descriptive statistics, for example, frequency distribution, percentages, and standard deviation. Information will then be exhibited in the form of frequency tables. A test of Multi-co linearity will be carried out applying the Pearson correlation analysis to check for any relationship between variables. The conceptual model to be applied is as demonstrated as follows:

$Y=f(X1, X2, X3)$ … .....…. (1)

The dependent variable Y speaking to operational efficiency will be measured by a ratio of costs and income, while the independent X1, X2, and X3 represents Number of ATMs, Number of Agents and Total bank assets.

3.6 Analytical Model

This study will apply a Multiple Linear Regression Analysis.

$Y = \beta_o + \beta\ 1LnX1+\beta2LnX2+\beta3LnX3+\epsilon$… … .....….... (2)

Y = Operational efficiency (operational costs/operational income).

β_o = Constant

$\beta1 – \beta3$ = Intercept of independent variables

X1 = Product Innovation – Number of ATMs

X2 = Product Innovation – Number of Agents

X3 = Bank Size – Total Assets

Є = Error term

3.7 Diagnostic Tests

To test for serial correlation of the information set, the Durbin watson test will be conducted. Ranges from 0 to 4 are Durbin Watsons measurement ranges, hence this is of value. Residuals are viewed as uncorrelated when Durbin watson measurement is estomated as 2; near 0 indicates a solid positive connection as a rule of thumb. Value of 4 indicates a solid negative relationship.

3.8 Tests of Significance

The significance of the model will be measured by applying the F-test at 5% level of significance. Examination of variance (ANOVA) will be used. The correlation coefficient, R and coefficient of determination, R^2 will be applied to examine significance of regression model in clarifying the connection amongst financial innovation and operational efficiency.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This section illustrates the information managed out of samples gathered throughout the research with regards to effects of financial innovations on operational efficiency of commercial banks as listed at the Nairobi Security Exchange. The population section consisted of operational 42 Kenyan commercial banks as at 30th September 2015.

4.2 Descriptive Statistics

These are measures which outline overall features of the information under research. They define nature of response from primary data and/or secondary data. For this research, Descriptive statistics comprise of: the mean, standard deviation, minimum and maximum. Descriptive statistics analysis was executed on operation efficiency, number of ATMs, number of agency outlets and size of bank. The descriptive statistics results are tabulated below

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Operational Efficiency	50	0	1	.48	.126
Number of ATMs	50	44	615	269.54	240.057
Number of Agency Outlets	50	15	17523	4213.36	6208.580
Size of Bank	50	277729	231215358	143050546	88487893
Valid N (list wise)	50				

Source: Research finding

This gives the summary of the population characteristics between cost efficiency and non-performing loans. The results of tests on the differences in means of all variables were also considered i.e. operational efficiency, number of ATMs, number of agency outlets and size of bank. Their means, medians, minimum, maximum and standard deviation were considered. The results are indicated as shown in table 4.1 above.

These results (in table 4.1) showed the tests in differences in means of all variables, i.e. operational efficiency showed the average percentage mean of 0.48 with a standard deviation of 0.126, number of ATMs showed a mean of 269.54 with a standard deviation of 240.057, number of agency outlets showed a mean of 4213.36 with a standard deviation of 6208.580, while size bank showed a mean of 143051 with a standard deviation of 88488. The positive values imply that all variables under the model are significant in determining the effect of financial innovations on operational efficiency among commercial banks as recorded at the Nairobi Security Exchange.

4.3 Diagnostic Statistics

Multicollinearity test and auto correlation test, were conducted to establish the relationship between the study variables.

4.3.1 Multicollinearity Test

This is achieved by a high grade of association amongst independent variables which is alleged to be a problem of multicollinearity. This can also be resolved by removing one of the extremely correlated variables.

Table 4.2 Collinearity Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Number of ATMs	.144	6.968
	Number of Agency Outlets	.106	9.449
	Size of Bank	.426	2.346

a. Dependent Variable: Operational Efficiency

Table 4.2 displays the VIF and level of tolerance for the four variables. The Variance credit risk factor (VCRF) was verified in all the examination plus it ranged from above 1 to 4 which isn't a reason to create panic. VCRF larger than 10 is a cause of alarm and if the tolerance values were more than 0.2 (Myers, 1990); then any possibility of multicollinearity would be ruled out among the study variables which is also explained by Field (2009). The findings imply that all the variables met the required threshold and the variables portrayed no multicollinearity.

4.3.2 Auto Correlation Test

The straightforward statement is that the error terms aimed at dissimilar observations tend to be uncorrelated (lack of autocorrelation). In relation to Garson (2012), DW statistics that range from 0-4 and scores between 1.5and 2.5 indicates independent observations.

Table 4.3 Durbin Watson Test

Model	Durbin-Watson
1	2.331[a]

a. Predictors: (Constant), size of bank, number of ATMs, number of agency outlets

b. Dependent Variable: operational efficiency

The results on table 4.3 showed that all the variables generated DW prescribed value of 2.3, thus the residuals of the empirical model are not auto correlated. The results implied that all the variables met the required threshold of less than 2.5

4.4 Correlation Analysis

To measure the power of the connection amongst variables, the research applied Karl Pearson's coefficient of correlation. The Pearson product-moment correlation coefficient is a measure of the strength of a linear relationship between two variables and is denoted by *r*. The Pearson correlation coefficient, *r*, can take an array of values from +1 to -1. A value of 0 shows that there is no association between the two variables and greater than 0 indicates a +ve association. A value less than 0 indicates a -ve association. The findings are presented as follows in table 4.4 below

Table 4.4 : Correlation Analysis

	Operational Efficiency	Number of ATMs	Number of Agency Outlets	Size of Bank
Operational Efficiency	1			
Number of ATMs	.600**	1		
Number of Agency Outlets	.358*	.941**		
Size of Bank	-.238	-.720**	-.752**	1

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

*. Correlation is significant at the 0.05 level (2-tailed).

Results in table 4.4 above revealed that the correlation amongst the number of ATMs as well as operational efficiency is positive and significant (R=0.600, p value=0.001). This indicates that an increase in operational efficiency is associated with a decrease in

number of ATMs and a decrease in operational efficiency is associated with an increase in number of ATMs. Additionally, the study also reveals that the correlation between number of agency outlets and number of ATMs is positive and significant (R=0.941, p value=.001). This implies that an increase in number of agency outlets is associated with an increase in number of ATMs and a decrease in number of agency outlets is associated with a decline in number of ATMs. Finally, the study reveals that the correlation between size of the bank and number of agency outlets is negatively related and significant (R=-0.752, p value=.001). This implies that the size of the bank increases, the number of agency bank decreases.

4.5 Regression Analysis

The study conducted a multiple regressions on effect of economic innovations on operational efficiency within listed Kenyan commercial banks at the Nairobi security. Coefficient of determination describes the degree towards variations within dependent variable can certainly be described by variation in independent variables or the fraction of variation in the dependent variable (operational efficiency) which is enlightened by all the three(3) independent variables (size of the bank, number of ATMs and number of agency outlets).

Table 4.5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.859[a]	.738	.721	.04650

a. Predictors: (Constant), size of bank, number of atms, number of agency outlets

The coefficient of multiple correlation stands at 0.859, suggesting that there is a positive connection amongst actual values of dependent variable and those predicted by the regression model. The coefficient of determination, R Square, stands at 0.738, suggesting that approximately 73.8% of the variation thus financial innovations explain 73.8% of the variations by a linear model on operational efficiency.

Table 4.6: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.574	3	.191	43.244	.000[b]
	Residual	.203	46	.004		
	Total	.777	49			

a. Dependent Variable: operational efficiency

b. Predictors: (Constant), size of bank, number of atms, number of agency outlets

From the table 4.5, the F test statistic used in testing the significance of regression model having significance value of 0.00. Null hypothesis was that the regression model representing the relationship between the study variables is significant, and it was tested at the 0.05 significance level. The significance value of the test statistic implies that if the null hypothesis were true, then it would be unlikely that the test statistic as large as the computed one would be achieved. Therefore, the regression model significantly predicts the operational efficiency of commercial banks listed at the Nairobi security exchange at F (3, 46) = 43.244.

Table 4.7: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.759	.155		-4.887	.000
	Number of ATMs	.303	.029	2.309	10.332	.000
	Number of agency outlets	.077	.011	1.712	7.275	.000
	Size of bank	.006	.005	.136	1.186	.242

a. Dependent Variable: operational efficiency

From the table 4.7, all except one of the regression coefficients significantly predicts the dependent variable. The significant values of the test statistics used to evaluate the significance of the individual coefficients fall below 0.05 level at which the significance test was performed, except the coefficient of size of the bank. From the findings, this is illustrated that a unit rise within ATM numbers results in a change in the operational efficiency of the commercial banks by a multiple of 0.303, while a unit change in the number of ATMs and number of agency outlets results in a change in the operational efficiency by a multiple of 0.303 and 0.77 respectively. When we hold the impact of the dependent variables constant, the operational efficiency of the commercial banks will average 11% as suggested by the intercept of the regression model, which is also significant at 0.05 level.

4.6 Interpretation and Discussion of Findings

From the regression analysis, number of ATMs positively and significantly influenced the operational efficiency among commercial banks listed at the Nairobi security exchange (B= 0.303, t= 10.332, p=.000). Zewdie (2013) during his study, discovered that financial innovations such as ATM cards, credit cards, mobile banking and agency banking revealed a positive effect on performance of commercial banks but recommended a further study be done on financial measures as technology continues to penetrate in the market.

A unit rise in the quantity of agency outlets will lead to a 0.77 rise in operational efficiency. Number of agency outlets +vely and significantly influenced the cost efficiency among commercial banks in Kenya (B= 0.77, t= 7.275, p=.000). According to Damanpour and Gopalakrishnan, (2001) high-tech advancement in financial markets involves new features launched within a firm's assembly structure or process of provision or services aimed at manufacturing the aforementioned goods and/or services provision to the consumers. Motivators of such invention deeds comprise of; primary cost-effectivity of service conveyance, equity increment, improvement in services, time of delivery is reduced as well as operational flexibility rises. Cohen (1989) contends that hi-tech know-how operated in most important avenues to achieve this. First of all, the importantly reduced expenditures as well as prolonged ICT opportunity has enabled worldwide economic marketplace. The study reveals that number of ATMs contribute most to the operation efficiency followed by number of agency outlets. Approximately 5% degree of significance besides 95% degree of confidence, ATMs quantity, as well as agency outlets quantities stayed important in operation efficiency.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The section gives a summary of findings, conclusions of findings and recommendation based on the main findings on the result of financial innovations on operational efficiency of commercial banks listed at the Nairobi security exchange.

5.2 Summary of Findings

With reference to the regression model discussed in chapter four, the research established that the number of ATMs, number of agency outlets and size of bank influenced operational efficiency. The research established that the intercept was -0.759 for a range of five years. Particularly, the research established that the coefficient for number of ATMs was 0.303, meaning that number of ATMs positively and suggestively influenced operation efficiency between commercial banks listed in the Nairobi security exchange. If banks are well-organized, we may anticipate enhanced cost-effectiveness, better sums of monies intermediated, improved charges as well as quality of service for customers, in addition to greater security and soundness only if nearly all the efficacy savings are applied to improve capital buffers that absorb risk (Berger, Hunter and Timme, 1993). Additionally, high working cost, which is mainly due to labour expenditures, and investment firms' willpower to uphold great profit margins are the twin bank specific aspects that influence wider operational efficiency (Bawumia, Belnye and Ofori, 2005).

The implication of economic invention stays extensively acknowledged. Numerous researchers, emphasised significance witnessed from business commodities in the financial field (Miler, 1988 & Merton, 1992). Experimentally, one researcher demonstrated for example, every communal contributions trendy within 2000, on a dollar weighted-basis, 18% contained safekeeping which did not exist within 1994 (Tufano, 2002). Advancements aren't only imperative to companies within economic service business, they affect different organizations; e.g. empowering to generate wealth of large sums as well as trying to be cost-effective in all aspects of high-tech businesses. However, Mwangi (2011) examined the connection among a selected economic invention in addition levels of income within Kenyan commercial banks; he studied 44 registered commercial banks by CBK in the period 2005 to 2010. He used linear regression whereby Innovation was an independent variable and profitability as the dependent variable; he also used primary data in the form of questionnaire and review of secondary data. He unveiled that there is a significant connection amongst acceptance of various economic innovations as well as levels of income of the in Kenyan commercial banks.

The study also deduced a number of agency outlets positively and significantly influenced the operational efficiency among commercial banks listed at the Nairobi security exchange. The study finding conforms SBCs concentrated considered causes of investment firm selection as well as dispersion in relation to innovation, and additionally in what way SBCs influenced loan accessibility. Various scholarships measurably causes of probability and scheduling substantial investment firms' selection for SBC's. An essential part for authoritative structure in the selection choice: managing an account association with less bank sanctions and more bank offices will probably embrace furthermore to receive sooner as indicated by Srinivasan, and Woosley (2001) and

Akhavein, Frame, and White (2005). This suggests expansive saved money with a more "brought together" structure will probably receive SBCs. According to Berger, Cowan, and Frame, 2007 the utilization of the SBCs innovation still gives an impression of being, for the most part, constrained to huge saving money associations.

5.3 Conclusions

This study surveyed the consequence of economic inventions on operational efficiency of Kenyan commercial banks listed at the Nairobi security. The three (3) independent variables that were studied (ATM numbers, number of agency outlets and size of the bank) give details on a substantial 73.8% of operational efficiency among commercial banks listed at the Nairobi security exchange represented by adjusted R^2 (0.721). This is in line with Nyathira (2012) and Mwangi (2011) who argued that the economic invention certainly influences and is positively correlated to cost-effectiveness in investment area predominantly commercial banks and that there is a significant connection among the acceptance of various economic innovations as well as levels of income of Kenyan commercial banks. Therefore, if banks are efficient, we might then anticipate enhanced cost-effectiveness, larger quantities of monies intermediated, improved charges and quality of services to consumers, and bigger security and safety if some of the competence investments stay functional to improve capital buffers which absorb moments of uncertainty.

5.4 Recommendations

On the basis of the foregoing Analysis, discussion and observations in the study it would be appropriate to make the following recommendations;

Commercial banks of Kenya, being the controller of their own banking innovations and establishments to reaching out the considerable population, they should think through strategies that will not only benefit the banks in terms of population and popularity but also consider the profitability such that the operational efficiency is enhanced.

Management of commercial banks should militate against Moral hazard risks when advancing its number of ATMs/ number of agency outlets taking into consideration that the size of bank might play a very minimal role in the operational efficiency . This can be achieved by good strategic planning without necessarily setting out various plans in the name of profitability.

5.5 Revised Conceptual Framework

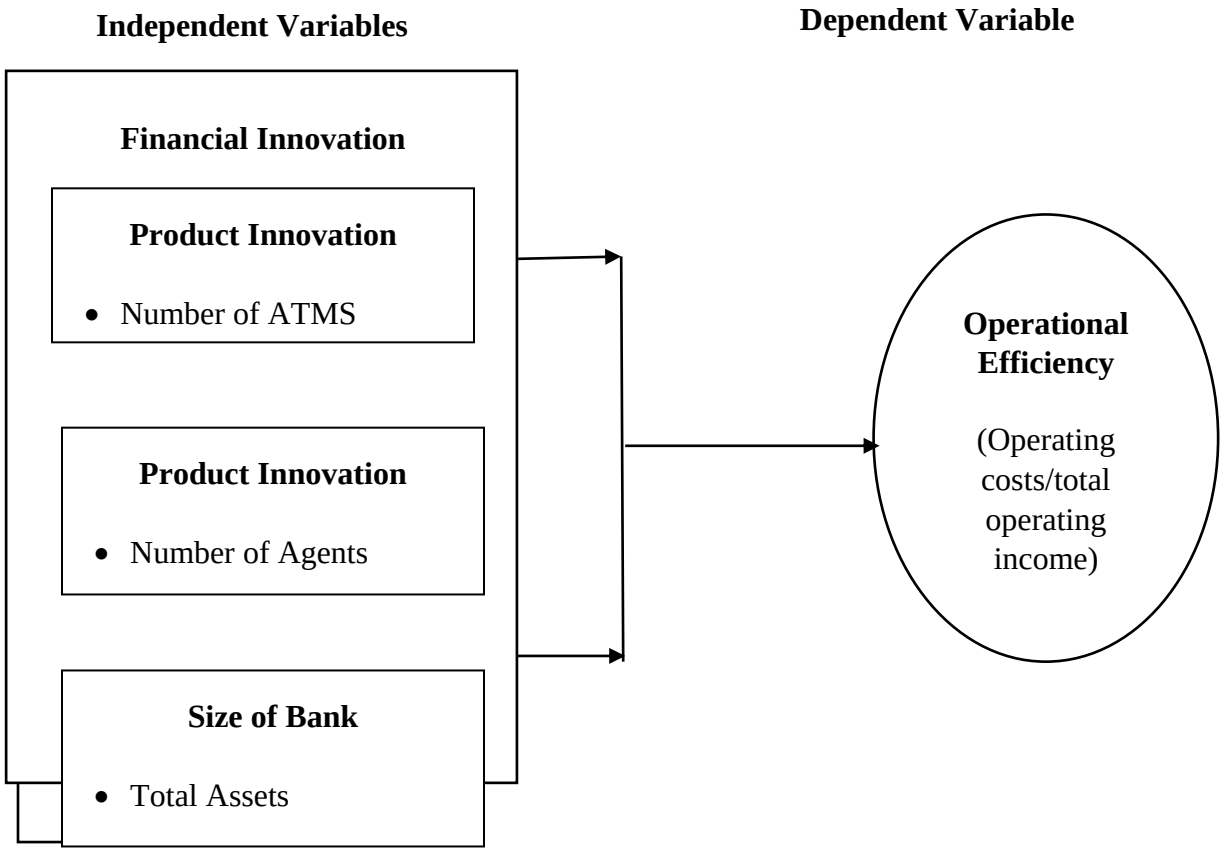

Figure 5.1: Revised Conceptual Framework

5.6 Limitation of the Study

Main objective of the research has been achieved. That was Investigation or establishment of the consequence of economic inventions on operational efficiency within commercial banks listed at the Nairobi security exchange. Central bank commercial banks and Nairobi security exchange well-thought-out round about material which are sensitive in addition to confidential therefore, researcher needed to convince the sample populace that the main purpose of data is educational study simply and wouldn't be cast-off for ill-mannered intentions.

A second limitation of this study is that the findings are applicable to Kenyan banks and within the period of study. It is not established whether the results are applicable outside Kenya or not. Further, operational efficiency is a day to day issue; the study has only given findings applicable at the time of study. As to whether the findings are applicable after the study was conducted the study has not expressly given that indication.

The third limitation of this study is that operational efficiency keeps on changing from every time depending on prevailing economic situations in the country and demand from the central bank hence financial innovations might reveal different operational cost based on the time of establishment

5.7 Suggestions for Further Research

The research recommends for additional studies should be carried out alike for banks based on the number of years in operation for comparison purposes. An alike research ought to be conducted on the effect of financial innovations loans on operational efficiency incorporating other variables such as the demographic characteristics, geographical location and as opposed to the size of bank A study can also be conducted in country by country to make better the findings on geographical effects which will in turn limit the 0generalization trend.

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APPENDICES

Appendix I: List of Commercial Banks

1	African Banking Corporation Ltd
2	Bank of Africa Kenya Ltd
3	Bank of Baroda (k) Ltd
4	Bank of India
5	Barclays Bank of Kenya Ltd
6	CFC Stanbic Bank Ltd
7	Charterhouse Bank Ltd
8	Chase Bank (k) Ltd
9	Citibank N.A
10	Commercial Bank of Africa Ltd
11	Consolidated Bank of Kenya Ltd
12	Co-operative Bank of Kenya Ltd
13	Credit Bank Ltd
14	Development Bank of Kenya Ltd
15	Diamond Trust Bank (k) Ltd
16	Eco bank Kenya Ltd
17	Equatorial Commercial Bank Ltd
18	Equity Bank Ltd
19	Family Bank Ltd
20	Fidelity Commercial Bank Ltd
21	Fina Bank Ltd
22	First Community Bank Ltd
22	Giro Commercial Bank Ltd
23	Gulf African Bank Ltd
24	Guardian Bank Ltd
25	Habib Bank A.G Zurich
26	Habib Bank Ltd
27	I&M Bank Ltd
28	Imperial Bank Ltd
29	Jamii Bora Bank Ltd
30	Kenya Commercial Bank Ltd
31	K-Rep Bank Ltd
32	Middle East Bank (k) Ltd
33	National Bank of Kenya Ltd
34	NIC Bank Ltd
35	Oriental Commercial Bank Ltd
36	Paramount Universal Bank Ltd
37	Prime Bank Ltd
38	Standard Chartered Bank (k) Ltd
39	Trans-National Bank ltd
40	UBA Kenya Bank Ltd
41	Victoria Commercial Bank Ltd

Source: CBK Banks Supervision Report December 2015

Appendix II: Secondary data from Commercial Banks in Kenya

Name of Bank.....

	2011	2012	2013	2014	2015
Operating costs					
Operating Income					
Product development costs					
Process improvement costs					
Organizational structuring costs					