THE RELATIONSHIP BETWEEN FINANCIAL INNOVATIONS AND THE GROWTH OF COMMERCIAL BANKS IN KENYA

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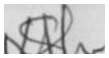
DECLARATION

This research project is my original work and has not been submitted for examination in any other University.

Signature:  Date:

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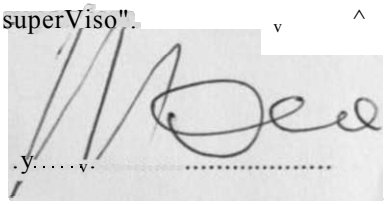
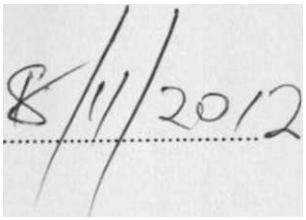
Signature:  Date: 

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DEDICATION

This work is dedicated to my family

ABSTRACT

The banking sector in Kenya is one of the fastest growing sectors of the economy having registered significance growth in the past two decades. However, very few studies have been done to examine the key drivers of growth for commercial banks in Kenya. This notwithstanding, it is important to note that the sector is one of the leading sectors in country when it comes to innovation. Thus, the objective of the study was to establish the relationship between financial innovations and the growth of commercial banks.

This study was designed as a correlation study. The population comprised of 43 commercial banks and all of them formed the sample size. Both primary and secondary data were used in the study with the primary data on financial instruments being collected using questionnaires while secondary data on growth indicators was collected from the financial statements of banks. Data from 32 (74.4% response rate) banks was collected and analysed using descriptive analysis, correlation analysis, and regression analysis.

The study found that financial innovation had a positive effect on growth factors - revenues, pre-tax profits, customer deposits, and loan advances. The study concludes that financial innovations of commercial banks in Kenya do not affect growth of banks. The study recommends that there is need for commercial banks to introduce more innovations in order to gain from the advantages that come with such innovations. There is also need or more product developments as opposed to technological innovations in the banking industry.

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ABBREVIATIONS

AHM	-	Alpine Hydrochemical Model
ANOVA	-	Analysis of Variance
ATM	-	Automated Teller Machine
GDP	-	Gross Domestic Product
IMF	-	International Monetary Fund
IT	-	Information Technology
SAP	-	Structural Adjustment Programs
SPSS	-	Statistical Package for Social Sciences
USA	-	United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

A relatively new and revolutionary discipline which has been reshaping the structure of world finance all over the world through design, expedite, volume of trade, and many more special creative solutions is coined as what we know as financial innovation (or financial engineering). Financial innovation can be defined as any new financial service or product which changes the way in which financial transactions are completed or delivered (Craigwell et al, 2005). Shortly after it was coined in 1980s in the finance literature, hardly anyone had captured the application and the innovation this had bought along in the recent years. Since the term is not properly defined, it has encompassed different meaning to different academicians and practitioners.

1.1.1 Concept of Financial Innovation

The financial innovation concept is mainly derived from Joseph Schumpeters economic innovation concept. Financial innovation means to change present financial system and adopt new financial tools in order to gain potential profits that cannot be obtained by present financial system and financial tools (Wang et al. 2009). It is a slowly-continued development process driven by a desire for profits.

Financial innovation has been a continuous and integral part of corporate world. Greater freedom and flexibility have thus enabled companies to invent and innovate financial instruments and their subsequent introduction. A variety of factors such as increased

interest rate volatility, frequency of tax and regulatory changes have stimulated the process of financial innovations. The deregulation of financial services industry and increased competition within investment banking undoubtedly led to increased emphasis on the ability to design new products, develop better process, and implement more effective solution for increasingly complex financial problems. These financial innovations are a result of number of Government regulations, tax policies, globalization, liberalization, privatization, integration with the international financial market and increasing risk in the domestic financial market. With the increased volatility in the capital markets, the need for new financial innovations to hedge risk and increase returns cannot be overstated (Nautiyal and Kavidayal, 2011).

The phenomenon effect of these revolutionary financial instruments has been recognized in the commercial banking industry, which has changed dramatically over the past three decades due to the financial innovation driven by technological change (Nautiyal and Kavidayal. 2011). The main concept behind these changes is spreading the process of globalization all over the world. Today, many commercial banks are embedded as part of global financial institutions that engage in a wide variety of financial activities apart from the financial intermediation.

Technological innovations associated with the development of telecommunication and information technology has spurred financial innovation that has altered bank products and services and production processes. Financial innovations associated with technological change totally changed the banking philosophy and that is further tuned by the competition in the banking industry. The challenging business environment within the

banking system has created more innovation in the fields of product, process and market. Innovation is clearly an important phenomenon in any sector of a modern economy. Although, the standard growth theories focused on capital resources in determining output or economic growth (Solow, 1957), performance of the economy depends on variety of other factors including innovation.

There is general recognition of the particular importance of financial innovation (Van Home 1985; Merton 1992, Lerner 2006). But, a striking feature of the financial literature however is that there are few empirical studies that test hypotheses or otherwise provide a quantitative analysis of financial innovation. This neglect is particularly puzzling given the special circumstances surrounding financial innovation.

1.1.2 Determinants of Business Growth

There are several determinants that determine the growth of a firm. The principal factors promoting firm growth are business strategies that are focused on product diversification and market share expansion; innovative activity, location in large urban centers; legal status as a limited liability company; the presence of price competition; presence in markets with high demand; and government regulations and policies such as import and export restrictions, tax regulations, exchange controls, labor regulations, anti-trust and environmental policy (Harabi, 2003).

The intense competitive environment has made innovation to become the key method for commercial banks to survive. The financial market is facing the new open era. where

many foreign commercial banks are entering into the large and medium-sized cities, which have a wealth of financial resources and sound financial environment. This situation results in the new competition in the same business, the competition of attracting high-end customers between foreign and domestic commercial banks is becoming one of the main issues which cannot be ignored (Ruan and Li, 2009).

The deep development of financial reform is an important impetus for economic development. At present, the processes of interest rate liberalization and the mixed operation are ongoing. However to commercial banks, interest rate liberalization and the mixed operation means big challenge to traditional business philosophy, management model and promotion method. This challenge forces commercial banks to make innovation objectively. All of these result in the necessary innovation in commercial banks (Ruan and Li. 2009).

Technological innovations associated with the development of telecommunication and information technology has spurred financial innovation that has altered bank products and services and production processes. Financial innovation associated with technological change totally changed the banking philosophy and that is further tuned by the competition in the banking industry. The challenging business environment within the banking system creates more innovation in the fields of product, process and market (Kavidaval and Naudiyal, 2011).

1.1.3 Measures of Growth

A number of studied on measurement of corporate measured growth in a number of ways. In a study by Michalopoulos et al. (2009) on financial innovation and endogenous growth, growth was measured as the average growth rate of per capita income. Since the study was based on a national level, it is the growth of the country that was measured using per capital income.

Another study by Rathnasiri (2010) on financial innovation and development of commercial banks in Sri Lanka measured growth of banks using the number of commercial banks, number of branches, total assets, number of customers served, density index and bank loans. Kasri (2010) in a study on determinants of Islamic banking growth in Indonesia used the growth in bank deposits as a measure of growth.

The CBK's Bank Annual Supervision Report (2011) has several indices that it uses to measure the growth of commercial banks in Kenya. These measures of growth take the form of revenues, pre-tax profits, the total asset base, amount of customer deposits, gross loans advanced to customers, branch networks, market share, customer numbers, and introduction of new products.

1.1.4 Financial Innovation and Growth

It is worthwhile to note here before delving much into this section that there is a relative dearth of empirical studies that specifically test hypotheses or otherwise provide a quantitative analysis of financial innovation (Frame & White, 2004). A survey on articles

of innovation generally by Cohen & Levin (1989) which included 251 articles and books (both theoretical and empirical) found none pertaining to financial services. Cohen (1995) updated the earlier survey and included 357 books and articles and none pertained to financial services. More recently, Frame & White (2004) used broader criteria and a longer time horizon but only found 39 articles that provided empirical tests of hypotheses of any kind concerning financial innovation.

In a study on welfare effects of inflation. Bashir (2002) constructed a neo-classical growth model demonstrating that the injuction against fixed interest payments induces the monetary authority in the Islamic economy to develop and innovate alternative financial instruments that do not have fixed nominal values and do not bear predetermined rates of return. The study further proved that financial innovation is welfare enhancing.

Most of the empirical studies have confirmed that finance or the financial system is the heart of an economy which determines economic growth in an economy (Levine, 1997). This perhaps displays the growing significance of financial innovation as a casual contributor in stimulating the economic growth and reengineering businesses particularly in emerging economies. The growing need of financial innovation in stimulating economic growth and businesses operations indeed can be viewed by explaining functions it has performed (Merton. 1992). Financial innovation is helpful in ensuring smooth functioning and improves the overall efficiency of the system by minimizing cost and reducing risk. More generally, financial innovation has been a central force driving the financial system toward greater economic efficiency (Merton and Bodie, 2005).

Apparently finance is an indispensable input and correlates with every other activities. Development of the financial sector would have direct and positive ramification in the economic growth, since better system can encourage more saving and investment and can also encourage better (more productive) investment decisions, these indirect positive effects from financial innovation are yet greater still (Frame and White, 2004). A discussion over economic development without banks and a fair change of technology is perhaps incomplete.

Banks work as the originators and channelize the innovations and facilitate the investors to accept the creativity in the market and the fair amount of and the friendly technology has provided a driving force to make a compatible environment and ease. The basic underlying "physical" technologies of finance are those of telecommunications and data processing, which provide the gathering of information, its transmission, and its analysis easy and fast. Increasingly, these technologies allow financial market participants to measure and manage their risk exposures more efficiently and effectively. For example, with respect to lending, asymmetric information problems imply that lenders have difficulties determining who is a creditworthy borrower (adverse selection) and also have difficulties monitoring borrowers after a loan has been made (moral hazard) (Ruan and Li. 2009).

Accordingly, better (more advanced faster, lower cost) physical technologies have permitted more innovations (e.g., credit and behavioural scoring) that allow lenders / to overcome those asymmetric information problems. Banks are mainly depends on interest income on loans. As such, by developing new banking businesses banks can speed up the

circulation of capital. Further, it improved the safety of assets by higher profitability and liquidity. This shows that financial innovation and exploration is the best strategy for banks adapting to the changing environment and escaping risk. Nevertheless, most of the commercial banks in developing countries are still engaging traditional banking activities (Wang, et al., 2009).

1.1.5 Commercial Banks in Kenya

Commercial banks are licensed and regulated under the Banking Act, Cap 488 and Prudential Regulations issued there-under. There are currently 43 commercial banks in Kenya. Out of the 43 institutions, 30 are locally owned and 12 are foreign owned. The locally owned financial institutions comprise 3 banks with significant government shareholding and 27 privately owned commercial banks. The foreign owned financial institutions comprised 8 locally incorporated foreign banks and 4 branches of foreign incorporated banks. (Bank Supervision Annual Report, 2011).

There are a number of financial innovations which have taken place in the banking industry in Kenya. For instance, recently some of the banks introduced Islamic banking. A more recent product in the banking industry is agency banking where banks are using agents to do their banking. These include kiosks, supermarkets, chemists, among others. Other innovations include M-Kesho and other mobile banking products such as MPESA and SMS banking. Automatic Teller Machines (ATMs), e-banking and internet banking, debit and credit cards, mortgage financing among other products (Bank Supervision Annual Report. 2011).

1.2 Statement of the Problem

The banking sector in Kenya is one of the fastest growing sectors of the economy having registered significance growth in the past two decades. However, very few studies have been done to examine the key drivers of growth for commercial banks in Kenya. This notwithstanding, it is important to note that the Sector is one of the leading sectors in country when it comes to innovation. Thus, the main objective of the study was to establish the relationship between financial innovations and the growth of commercial banks.

There are a number of innovations which have taken place in the banking industry ranging from products such as M-KESHO and a variety of mobile banking to distribution innovations such agency banking. Technological innovations have also been seen such as use of credit cards and debit cards, real time processing of transactions as well as ATMs. Indeed, the banking industry is one of the major consumers of information technology and software products in Kenya.

The intense competitive environment makes innovation become the key method for commercial bank to survive (Ruan & Li. 2009). Most of the innovations that have occurred have been occasioned by new distributional channel systems such as automatic teller machines and debit card technologies, which have allowed banks to diversify the way in which customers transfer funds, pay bills and buy goods and services without using cash or cheques. One drawback of examining the effect of innovation on productivity in the banking industry is that there is no clearly identifiable output.

A number of studies on the role financial innovation on the growth of commercial banks exist. For instance, Rathnasiri (2010) conducted a study on financial innovation and development of commercial banks in Sri Lanka. Valverde et al (2005) analysed the role of financial innovation in Banking and its impact on regional growth. Abir & Chokri (2010) similarly analysed the dynamics of financial innovation and performance of banking firms in the focusing the emerging banking industry of Tunisia. Boot & Thakar (1997) also conducted a study on the banking scope and financial innovation. Vargas (2007) in his studies assessed the contribution of financial innovations to the production of implicit services of financial intermediation in Costa Rica.

However, few studies on financial innovation and growth of commercial banks have been conducted in Kenya. For instance, Mwangi (2007) did a study on factors influencing financial innovation in securities market in Kenya. Gitau (2011) studied the relationship between financial innovation and financial performance of commercial banks in Kenya. A similar study was done by Makini (2010). Githakwa (2011) studied the relationship between financial innovation and profitability of commercial banks. Karanja (2011) studied relationship between financial innovation and growth of insurance companies in Kenya. Mikwa (2011) did a study on determinants of financial innovation and its impact on financial performance of microfinance institutions in Kenya. Jepkorir (2011) studied the challenges of implementing financial innovations by commercial banks in Kenya. Kinuthia (2010) analysed financial innovations in the banking sector in Kenya. Given that no study has been done on the effect of financial innovation on growth of commercial banks, this study seeks to bridge the gap by undertaking a study on the same. The following research questions guided the study:

1. What are the financial innovations in the banking sector in Kenya?
2. How do financial innovations affect the growth of the banking sector in Kenya?

1.3 Objective of the Study

The objective of this study was to establish the relationship between financial innovations and the growth of commercial banks in Kenya.

1.4 Importance of the Study

This study may be important to various different groups of people including:

The management and shareholders in the Kenyan banking industry who can use the findings of the study to better understand the dynamics of the industry and in making strategic decisions with respect to growth of their banks and improving competiveness of their banks.

Similarly, the study findings will be important to potential investors who will be able to understand the operations of the banking sector and particularly in making strategic decisions such market entry strategies and due diligence decisions and understanding their competition.

The government and regulators can also use the findings of the study to understand the effects of financial innovation in the banking sector and develop legislation and regulatory policies to promote the sector as well as regulate the industry with a view of better protecting the general public.

The study will also be important to policy makers in other sectors of the economy as they can use financial innovations to replicate similar success in their respective sectors.

Finally, researchers and scholars can use the findings of the study and expand their knowledge on financial innovation and also identify areas of further study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature on financial innovation and growth. First, a theoretical review on financial innovation is presented followed by an empirical review on financial innovation and its effects on growth. Lastly, a summary of the chapter is presented where research gap is identified.

2.2 Theories of Financial Innovation

In early study, western scholars searched the original motive of financial innovation through different ways. In earlier time. Greenbaum and Haywood (1973) reviewed the history of American financial market and argued that the growth of wealth is the determinant of demand of financial innovation. In other words, the fast development of economy caused financial innovation to develop at a high speed. Besides, there are four famous theories of the innovation motive, including constraint-induced financial innovation theory of W.L.Silber. transaction cost innovation theory of Hicks and Niehans, regulation innovation theory of Davies and Si I la. and circumvention innovation theory of Kane.

American economist Silber (1983) advanced constraint-induced financial innovation theory. This theory pointed out that the purpose of profit maximization of financial institution is the key reason of financial innovation. There are some restrictions (including external handicaps such as policy and internal handicaps such as organizational

management) in the process of pursuing profit maximization. Though these restrictions not only guarantee the stability of management, they reduce the efficiency of financial institution, so financial institutions strive toward casting them off. Constraint-induced innovation theory discussed the financial innovation from microeconomics, so it is originated and representative. But it emphasized "innovation in adversity" excessively. So it cannot express the phenomenon of financial innovation increasing in the trend of liberal finance commendably.

American economist Kane (1981) is the pioneer of circumventation innovation theory. He thinks that many forms of government regulations and controls, which has the same property of implicit taxation, embarrass the profitable activity engaged by the company and the opportunity of earning profit, so the market innovation and regulation innovation should be regarded as the continuous fighting process between independent economic force and political force. Financial institutions deal with the status such as the reduction of profit and the failure of management induced by government regulations in order to reduce the potential loss to the minimum. Therefore, financial innovation is mostly induced by the purpose of earning profit and circumventing government regulations. It comes true through the game between government and microcosmic economic unity. Kane's theory is different from the reality. The regulation innovation he assumed is always towards the direction of reinforcing regulation, however, the regulation innovation in reality is always towards the direction of liberal markets innovation, the result of the game is release of financial regulation and markets become more liberal. But his theory is better than constraint-induced financial innovation theory. It not only considered the

origin of innovation in the market but also researched the process of regulation innovation and their dynamic relation.

Regulation innovation theory was put forward by Scylla et al. in 1982. They argued researching financial innovation from the perspective of economy development history. They thought financial innovation connects with social regulation closely, and it is a regulation transformation which has mutual influence and is mutual causality with economic regulation. They thought that it is very difficult to have space of financial innovation in the planned economy with strict control and in the pure free-market economy, so any change leaded by regulation reform in financial system can be regarded as financial innovation. The Omni-directional finance innovative activities can only appear in the market economy controlled by government. When government's intervention and the management have hindered the finance activities, there will be many kinds of financial innovation which intend to circumvent or get rid of government controls. The game between the market and government finally form the spiral development process, namely, "control-innovate-controls again-innovates again". In this theory which expanded the scope of financial innovation, government activity is also regards as the origin of financial innovation. But it regards regulation innovation as one part of financial innovation. Particularly, it regards rules and regulations which are used to control as financial innovation.

The transaction cost innovation theory's main pioneers are Hicks and Niehans (1983). They thought that the dominant factor of financial innovation is the reduction of transaction cost, and in fact, financial innovation is the response of the advance in

technology which caused the transaction cost to reduce. The reduction of transaction cost can stimulate financial innovation and improvement financial service. This theory studied the financial innovation from the perspective of microscopic economic structure change. It thought that the motive of financial innovation is to reduce the transaction cost. And the theory explained from another perspective that the radical motive of financial innovation is the financial institutes* purpose of earning benefits

2.3 Financial Innovation

Frame and White (2004) define financial innovation as "...something new that reduces costs, reduces risks or provides an improved product/service/instrument that better satisfies participants' demands..." within a financial system. Innovations can emerge due to technological changes, as well as a response to increased risk or to new regulations. They noted that when defining financial innovation the usual approach is to categorize it into three groups, according to where innovations occur. These include process innovation (refers to new production processes that allow the provision of new or existing financial products and services), organizational innovation (encompasses new institutions or organizational structures within institutions) and product innovations (new products or services created to meet market needs).

Financial innovations can be grouped as new products (e.g., adjustable rate mortgages: exchange-traded index funds); new services (e.g.. on-line securities trading; Internet banking): new "production" processes (e.g., electronic record-keeping for securities; credit scoring): or new organizational forms (e.g., a new type of electronic exchange for

trading securities; Internet-only banks). Of course, if a new intermediate product or service is created and used by financial services firms, then it may become part of a new financial production process (Frame & White, 2004).

Financial innovation can also be as defined as any new financial service or product which changes the way in which financial transactions are completed or delivered (Zephirin and Seerattan, 1997). Most of the innovations that have occurred have been occasioned by new distributional channel systems such as automatic teller machines (ATMs) and debit card technologies, which have allowed banks to diversify the way in which customers transfer funds, pay bills and buy goods and services without using cash or cheques. In essence, technological innovation in the banking system has lowered costs per transaction and realized processing efficiencies by shortening the time taken for completing a transaction and reducing the possibility of human errors (Parris, 2002).

Given the potential importance of financial innovation to bank behaviour, the recent focus of empirical work has been on its impact on productivity. Wilson (1995), in his survey, concludes that the majority of the studies are in agreement with what has come to be known as the "IT Paradox", where information technology (IT) investment has an insignificant impact on productivity.

One drawback of examining the effect of innovation on productivity in the banking industry is that there is no clearly identifiable output. For example. Haynes and Thompson (2000) used real earning assets as the output variable while Frei et al (1997) utilised total loans plus total deposits. However, the output of the banking firm should not be linked to

a single variable but to a multiplicity of variables that capture the many services offered by a commercial bank. In addition, linking innovations to productivity ignores an important factor firms consider when investing in product or process innovations, namely, efficiency.

Lemer 2006 analyzes the sources of financial innovations between 1990 and 2002. He found evidence that small banks are more innovative than their larger peers. Small and less profitable firms innovate more, but banks that innovate enjoy enhanced profitability in subsequent years. Older, less leveraged banks located in regions with more financial innovations also innovate more. Schumpeter (1950) contends that large banks with market power are most likely to advance industrial technology because of their superior access to capital, the ability to pool risks, and economies of scale. Scherer (1984) confirmed the same finding suggesting that small banks are relatively more likely to innovate than are large banks, because of standard competitive motives.

Innovation is mainly driven by modern globalization and investors and government resulting in exposing to new and wider international risk, innovation becomes a new tool to solve, manage and transfer the entire extra burden. Some authors pointing increase in volatility as a stimulus to innovation. For example. Smith, et al (1990) documented the increase in the volatility of interest rates, exchange rates, and commodity prices, and draw a relation between increase in riskiness and financial innovation. But. recently there are two important contributors for transformation of financial sector - fechnological changes and deregulation. The deregulation of banking systems, in particular, promotes economic growth through improved allocation, efficiency and a reduction of financial service costs.

The centrality of finance in an economy and its importance for economic growth (Levine, 1997) naturally raises the importance of financial innovation - and its diffusion. Since finance is a facilitator of virtually all production activity and much consumption activity, improvements in the financial sector will have direct positive ramifications throughout an economy. Further, since better finance can encourage more saving and investment and can also encourage better (more productive) investment decisions, these indirect positive effects from financial innovation add further to its value for an economy. The importance of financial innovation has been discussed in a number of articles, most notably: Van Home (1985). Merton (1992, 1995), and Tufano (2003).

Given its importance, an understanding of the conditions that encourage innovation would appear to be worthwhile. After all, observed streams of innovations are clearly not uniform across all enterprises, across all industries, or across all time periods. The general innovation literature in economics has sought to uncover the environmental conditions that affect the stream of innovations - focusing on hypotheses concerning roughly five structural conditions: (1) the market power of enterprises; (2) the size of enterprises; (3) technological opportunity; (4) appropriatability: and (5) product market demand conditions.5 Of course, when environmental changes occur, we expect to observe an initial wave of financial innovations followed by a new equilibrium flow consistent with the new environmental conditions (Frame & White. 2010).

Joseph and Stone, (2003) point out that, effective service delivery is important and has a great influence on customer satisfaction, improving sales and market share. Commercial

banking is at a stage where customer perceptions and preferences have a very important impact on a bank's success. Customer satisfaction is a measure of how products and services supplied by a company meet or surpass customer expectation.

In the effort to deliver effective services, the banking sector undertakes numerous approaches and among them is the innovation and use of information technology. Information technology is a medium that has revolutionized banking and everyday operations at the click of a button thus enabling sophisticated product development, better market infrastructure, implementation of reliable techniques for control of risks and reaching geographically distant and diversified markets (Kimutai, 2008).

2.4 Measures of Growth

A number of studied have measured growth in a number of ways. For instance, in a study by Michalopoulos et al. (2009) on financial innovation and endogenous growth, growth was measured as the average growth rate of per capita income. Since the study was based on a national level, it is the growth of the country that was measured using per capital income.

Another study by Rathnasiri (2010) on financial innovation and development of commercial banks in Sri Lanka measured growth of banks using the number of commercial banks, number of branches, total assets, number of customers served, density index and bank loans. Githakwa (2011) on the other hand used profitability as a measure of bank growth.

Sholtens (2000) analysed competition, growth, and performance in the banking industry using profit growth as the measurement of growth. Benito (2008) on the other hand, in his studies on size, growth and bank dynamics analyzed the growth of banks on three different size measures of total assets, total loans and total deposits.

2.5 Empirical Review

A study by Craigwell, et al (2005) sought to study the impact of financial innovation on bank efficiency in Barbados. Data envelopment analysis and the stochastic cost frontier methodology were used to analyse the impact for the period 1979 to 1999. The regression results showed that financial innovation was a significant determinant of bank efficiency. This relates well with what Merton (1995) noted that financial innovations are seen as a force driving the global financial system towards its goal of greater economic efficiency. In particular, innovations involving derivatives can improve efficiency by expanding opportunities for risk sharing, by lowering transaction costs and by reducing asymmetric information and agency costs.

The analysis of financial innovations has become increasingly important with the recent changes in banking activity. Ebrahim and Hussain (2010) identify financial innovation as one key of financial development transmission channels. However, despite the fact that financial innovation is charged in the recent crisis, it steel needed nevertheless through products which allow some insurance against the risk like credit default swap. Thus, adopting financial innovations has become more of a necessity than a choice for banks,

even in emerging markets like Tunisia. Financial innovations are used by banks as formidable strategic variables to outstrip the competition and have become an essential means for the bank to improve its performance and to maintain its effectiveness on the market (Batiz-Lazo and Woldesenbet, 2006). This stimulates the interest in studying the relationship between financial innovations and banking performance.

Generally, innovation has generated a wide interest as a research subject in social sciences with a particular focus on the relationship between innovation and competitive advantage. In a highly turbulent environment, a successful innovation creating a unique competitive position can give the company a competitive advantage and lead to a superior performance (Roberts and Amit, 2003). This can only be maintained by ceaseless innovation and improvement of the product and the process.

Philippas & Siriopoulos (2009) sought to show how the influence of the diffusion speed of a financial innovation increases the operational risk in any business line with different rate. A stochastic model was considered presenting the influence of diffusion speed of financial innovations in order to validate the operational risk, without taking into consideration any external factors that create operational risk. The findings suggested that a financial innovation is more likely to occur and spread in production lines that have a great crosscorrelation with an increasing operational risk.

Odularu & Okunrinboye (2009) attempted to analyse whether financial innovations that occurred in Nigeria after the Structural Adjustment Programme of 1986 had affected the demand for money in Nigeria using the Engle and Granger Two-Step Cointegration

technique. The study discovered that the financial innovations introduced into the financial system had not significantly affected the demand for money in Nigeria. Financial innovation in this study was measured using two methods. First, the nominal rate on treasury bills proxy variable was used. Then, a dummy variable to capture financial innovations since the introduction of SAPs was used.

A study by Michalopoulos et al (2009) tested the relationship between financial innovation and endogenous growth. This was done by extending the regression specification to include not only measures of financial development but also financial innovation. The results showed a negative and significant effect of financial innovation on economic growth (growth rate of real per capita GDP minus that of USA). This finding leads researchers to the conclusion that rather than stressing the level of financial development, there is need to highlight the vital role of financial innovation in supporting economic growth.

Vargas (2007) assessed the contribution of financial innovations to the production of implicit services of financial intermediation in Costa Rica. From his studies, he noted that although it is still low. the importance of innovations on total intermediation output grew steadily during the period considered. Several intermediaries reported that new products were planned to be introduced during 2008. like loans specific for payment of tuition costs and several deposits with specific purpose. Hence, it was likely that the upward trendmay continue, because the drive for innovation in the Costa Rican financial system was persistent.

Abir & Chokri (2010) similarly analysed the dynamics of financial innovation and performance of banking firms in the focusing the emerging banking industry of Tunisia. This study tried to shed light on the relationship between innovation and performance in the financial services sector by considering factors inside and outside the firm that are likely to influence this relationship, while taking into account the reverse causality that exists between innovation and performance. The results suggested that imitator banks were less profitable than first mover institutions. Being a first mover conferred to the bank a competitive advantage and a more important market share. The study also noted that the first adopters successfully improved their efficiency by adopting new technologies. Similarly, the research noted that the first movers adopting financial innovations were likely to control their credit risk contrary to the imitators. Thus, the results show that the imitators achieve a lower performance

Mwangi (2007) analysed the factors influencing financial innovation in Kenya's securities markets. He noted that the Kenyan security market performamnce in regard to spurring new financial innovations remains relatively poor despite being ranked fourth best in Africa. The research found out that the domestioc capital markets has few financial instruments and does not have ihe capacity to incorporate new financial instruments in the context of the current legal, regulatory and institutional framworks. From the research. Mwangi noted that there are a number of factors affecting financial innovationa which range from from regulatory factors such as listing rules and requirements to laws protecting in investors interests at the markets. In addition, financial innovation is also affected by market volatility, unstable foreign exchange and interest rates, technology and global financial competition.

Githakvva (201 I) analysed the relationship between financial innovation and profitability of commercial banks in Kenya. He noted that many commercial banks in Kenya have embraced financial innovation as a way to increase efficiency and improve the banks performance. The innovations have taken various forms including massive branch expansion, development of unique products that serve specific groups and automation of banking services. These have enabled customers to carry out banking transactions outside the confines of the banking premises either on their phones or over the intenet. The study concluded that the implementation of financial innovation makes commercial banks save great resources, reduce costs of operations and enable commercial banks in Kenya satify their commercial needs.

A study by Kinuthia (2007) on the financial innovations in the banking sector in Kenya revealed that competition amongst commercial banks has pushed the banks towards becoming more innovative. The study revealed that most large and medium sized banks innovate regularly while small banks were split between innovating regularly and on rare occassions. The study also revealed that privately owned domestic banks led other banks in financial innovation followed by foreing public owned banks and banks with government participation. Private foreign owned banks were the last in financial innovation. It was noted that 2006 was the year when financial innovations in begun being introduced by commercial banks in Kenya.

Makini (2010) analysed the relationship between financial innovation and financial performance of commercial banks in Kenya. From the study, it was noted that financial

innovations improved operations, improved liquidity and the asset quality in commercial banks. This has helped commercial banks remain competitive in the market. Thus, banks that have invested in financial innovations have improved their financial performance. Financila innovations also deepen liquidity of banks, for instance, by reducing excessive reliance on a narrow base of depositors for funding. The sudv revelaed that financial innovation has improved earnings, asset quality and has increased efficiency in operations as a whole and especially in commercial banks in emerging markets and developing countires such as Kenya.

2.6 Summary and Research Gap

The literature review has clearly introduced the concept of financial innovation. Definition of the concept, its importance and the factors that lead to financial innovation were reviewed in the theoretical literature. Past studies on financial innovation have also been reviewed. It is clear from the empirical review that little if any has been done to study the effect of financial innovation on growth. Only one study attempted to do the same using the innovation model by Schumpeter. This model relates financial development of a country to the economic growth as measured by GDP. Michalopoulos et al (2009) modified the model to introduce financial innovation but still the study was more on the macro-economic level than on micro-economic level. This is the gap the present study seeks to bridge by modifying the model at a micro-economic level in order to measure the effect of financial innovation on growth of commercial banks.

CHAPTER THREE

RESEARCH METHODLOGY

3.1 Introduction

This chapter describes the research methodology of the study. It describes the research design, sampling design, target population, data collection procedures, analysis management and the ethical considerations in the study.

3.2 Research Design

Research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in the procedure. Kothari (2004) observed that research design is a blue print which facilitates the smooth sailing of the various research operations, thereby making research as efficient as possible hence yielding maximum information with minimal expenditure of effort, time and money.

This study used a correlation design. According to Walliman (2011), a correlation design is used to examine a relationship between two or more concepts. Since this study sought to assess the impact of financial innovation on growth of commercial banks, a correlation design was therefore selected for the study.

3.3 Population

A population is a group of individual persons, objects or items from which samples are taken for measurements, it is the group the investigator wishes to make inferences from.

According to Central Bank of Kenya (2012). there were a total of 43 commercial banks as at 31" December 2011. The target population was all the 43 commercial banks currently registered and operating in Kenya. Given the nature of this study, it was prudent that all the banks form the sample size. Thus the sample size was 43 commercial banks.

3.4 Research Model

The following model was used in the study:

$$Growth = bo + bi\ Finlnno + u$$

Growth is measured in terms of the growth in terms of revenues, pretax profits, customer deposits, loan advances of commercial banks and number of customers between 2002 to 2011.

Finlnno is the tlnancial innovation variable measured from the questionnaires. It will be measured using the number of financial innovations introduced in the banking industry between 2002 to 2011

u is an error term

In the above model, growth is the dependent variable while financial innovation and the total asset base are the independent variables. From the model the study aims to establish the relationship between the various measures of growth of commercial banks and financial innovation.

3.5 Data Collection

The study used both primary and secondary data. The questionnaire was designed and used to collect primary data. It was used to collect data on financial innovation. The questionnaire was administered using drop and pick method. Where possible, the instrument was emailed to the respondents. The respondents were the Managing Directors of the banks. Secondary data was used to collect data on growth of commercial banks. This was collected from the banks' annual reports.

3.6 Data Analysis

In order to analyze collected data Miller (1991) observed that, a researcher needs to have the following information about the statistical data analysis tools namely: descriptive, inferential and test statistics. The author observed that, descriptive statistics are used to describe data collected from a sample. The mean, median, percentages and standard deviation are the most commonly used descriptive statistics. The author further observed that, inferential statistics are used to make inferences from sample statistics to population parameters. These tools help the researcher to generalize the findings from the sample to the target population.

First, descriptive statistics were used to analyse the data using the variables in the model used in the study. The mean scores on the variables were interpreted. Other descriptive statistics such as min. max. and standard deviations were interpreted.

Secondly, correlation analysis was used to test any correlations between the variables in the model. This also helped identify any serial correlations between the independent variables. The results were interpreted in terms of Pearson correlations, r, and the p-values. Significance was tested at 5% level.

Lastly, a regression analysis was also performed in order to assess the effect of financial innovation on growth of commercial banks. Significance of beta values at 5% level were interpreted. The model was tested for significance using the F statistic in the ANOVA. R^2 was interpreted for the variance it explains in the model. This analysis was carried out using Statistical Package for Social Sciences (SPSSv20). The results were presented in charts and tables.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Data Analysis and Findings

4.1.1 Introduction

This chapter presents the results of the study. The analysis is based on questionnaires from 32 commercial banks representing 74.4% of commercial banks in Kenya. The chapter is organised as follows: section 4.2 presents the descriptive results, section 4.3 presents the regression and correlation results while section 4.4 is the discussion of findings.

4.1.2 Descriptive Analysis Results

Table I shows the results for the ownership of commercial banks that participated in the study. The results are also shown in Figure I.

Table 1: Bank Ownership

	Frequency	**Percent**
Local public	8	25.0
Local private	16	50.0
Foreign	8	25.0
Total	32	**100.0**

Source: Author (2012)

The results show that 25% of the banks were local and public banks. 50% were local and private banks while the remaining 25% were foreign commercial banks. Thus 75% of the banks were local while 25% were foreign banks.

Figure I: Bank Ownership

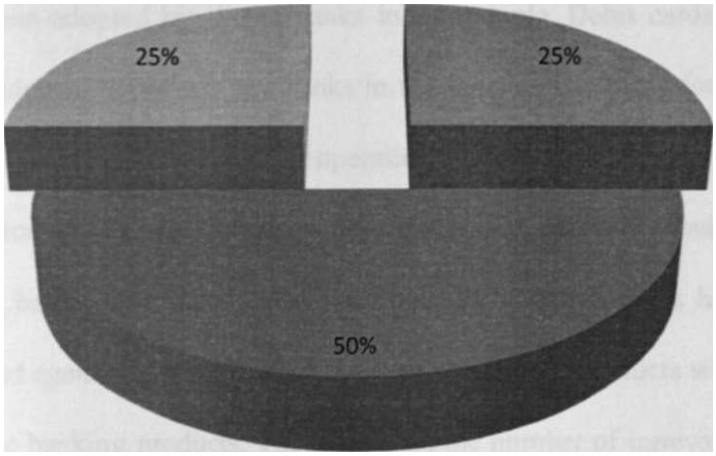

Table 2 presents the various financial innovations by commercial banks in Kenya. The results show the number of banks with various innovations.

Table 2: Bank Financial Innovations in Kenya

Bank innovations	Frequency	Percent
Automatic teller machines (ATM's)	32	100
Branch network expansion	32	100
E-banking / Internet Banking	32	100
Debit cards	30	94
Mobile banking	30	94
Change in core banking operating systems	26	81
Personal unsecured loans	22	69
Mortgage related products	20	63
SMS banking	20	63
Credit cards	18	56
Agency banking	6	19
Insurance related products	6	19
Islamic banking products	4	13

Source: Author (2012)

As the results show. ATMs, branch network expansion and e-banking/internet banking had been adopted by all the banks in the sample. Debit cards and mobile banking had been adopted by 94% of the banks in the sample. The study found that 81% of the banks had changed their core banking operating systems and 69% gave personal unsecured loans to customers. Further, mortgage related products and SMS banking were offered by 63% of the banks. The results also show that 56% of the banks had credit cards, 19% had adopted agency banking. 19% had insurance related products while 13% of the banks had Islamic banking products. Table 3 shows the number of innovations per bank while table 4 shows the respective innovations for each of the banks studied.

Table 3: Number of Innovations for Selected Banks

Bank	**No. of innovations**
Barclays	12
Cooperative bank	11
Equity Bank	11
KCB	11
Standard Chartered	10
Chase	10
Diamond Trust	10
ABC	9
Consolidated Bank	9
Family Bank	9
CBA	8
Ecobank	8
l&M	8
K-Rep	7
NIC	7
CFC	6
NBK	6

Source: Author (2012)

As shown in table 3. Barclays bank had the highest number of financial innovations (12) followed by Cooperative bank. Equity bank, and KCB each having 11 innovations. CFC and NBK had 6 innovations each representing firms with the least number of innovations. Table 5 shows a summary of descriptive results of the study model variables. The results are presented as minimum, maximum, mean, and standard deviation.

Table 4: Summary Descriptive Statistics for the Variables

Performance growth	Minimum	Maximum	Mean	SD
Revenues (%)	117.75	2102.73	683.8519	644.71197
Pretax profits (%)	-1941.71	6639.26	1193.4150	2369.95571
Customer deposits (%)	118.05	2843.21	795.2106	758.87545
Loan Advances (%)	13.68	2758.81	917.0275	919.74693
Innovations (number)	6.00	12.00	8.8750	1.85742

Source: **Author (2012)**

The results in table 5 show that the minimum revenue growth recorded by one of the banks was 117.75% while the maximum revenue growth rate recorded was by another bank was 2102.73% for the period under study. The mean grov\th revenue was 683.85% with a standard deviation of 644.71%. Thus there was a positive and large revenue growth for the sample firms. Generally, there was a growth in revenue of more than six times over the period.

The results on the pre-tax profits show that the minimum growth rate recorded by one of the banks for the period under study was -1941.71% while the maximum growth rate

recorded by one of the banks was 6639.26%. The mean growth rate for pre-tax profits was 1193.41% with a standard deviation of 2369.95%. There was therefore a growth of more than 11 times in the pretax profits of banks over the period of analysis.

The growth in customer deposits ranged from a minimum of 118.05% for one of the banks to a maximum 2843.21% for another bank. The mean growth rate for customer deposits was 795.21% with a standard deviation of 758.87%. This means that customer deposits had grown by more than 7 times over the period of analysis.

The results show that the growth in loan advances ranged from a low of 13.68% for one of the banks to a high of 2758.81% for another bank. The mean growth rate for customer deposits was 917.02% and the standard deviation was 919.74%. These results mean that the loan advances grew more than 9 times over the period of analysis.

The study found that the number of innovations ranged from a low of 6 innovations to a high of 12 innovations. The mean was 8.87 and a standard deviation of 1.85. Thus there was an average of 9 innovations from each of the banks surveyed.

4.1.3 Correlation and Regression Analysis Results

Table 6 shows the correlation results between the variables in the study. Growth was the dependent variable and was measured using growth in revenues, pre-tax profits, customer deposits, and loan advances. The independent variable was financial innovation measured as the number of innovations by the banks.

Table 5: Correlation Results

		1	2	3	4	5
Revenues	Pearson Correlation	**1**	.482	.940"	.962"	.155
	Sig. (2-tailed)		.059	.000	.000	.566
Pre-tax profits	Pearson Correlation		**1**	.410	.539*	.424
	Sig. (2-tailed)			.115	.031	.102
Customer deposits	Pearson Correlation			**1**	.890"	.169
	Sig. (2-tailed)				.000	.532
Loan Advances	Pearson Correlation				**1**	.161
	Sig. (2-tailed)					.551
Financial innovation	Pearson Correlation					1
	Sig. (2-tailed)					
**. Correlation is signi	leant at the 0.01 level (2-tailed).					
Correlation is significant at the 0.05 level (2-tailed).						

Source: **Author (2012)**

As shown, the study found no significant correlation between financial innovation (independent variable) and any of the growth variables. However, significant correlations were found between revenues and customer deposits, revenues and loan advances, loan advances and pre-tax profits, and between customer deposits and loan advances. But since the correlations were only observed between the dependent variables, there is no problem of multicollinearity.

Table 7 shows the regression results from the model in chapter 3. Four growth models were used - revenues, pre-tax profits, customer deposits, and loan advances. Significance values are shown in parentheses. As the results show, financial innovation had a positive but insignificant effect on revenue growth. Financial innovation accounted for 2.4% of the

variance in revenue growth. The F statistic for the revenue growth model was 0.345 but was insignificant at 5% level. The revenues growth model SPSS output are also shown in appendix 3.

Table 6: Regression Results

	Revenues	**Pre-tax Profits**	**Customer Deposits**	**Loan Advances**
Constant	206.114	-3609.936	183.141	208.668
Financial innovation	53.83 (.566)	541.223 (.102)	68.966 (.532)	79.815 (.551)
R	.155	.424	.169	.161
R"	.024	.180	.028	.026
	.345 (.566)	3.072 (.102)	.411 (.532)	.373 (-551)

Source: **Author (2012)**

The results from the pre-tax model show that financial innovation had a positive but insignificant effect on growth. The study found that financial innovation accounted for 18% of the variance in pre-tax profit growth but the F statistic of 3.072 was insignificant at 5% indicating that the model was insignificant. The pre-tax profits growth model SPSS output are also shown in appendix 4.

The study found that financial innovation had a positive but insignificant effect on customer deposit growth. From the R^2 it can be observed that 2.8% of the variance in customer deposits was as a result of financial innovations. The F statistic indicates that the model was not significant at 5%. The customer deposit growth model SPSS output are also shown in appendix 5.

The study also revealed that financial innovation had a positive but insignificant effect on growth in loan advances. The R^2 shows that financial innovation accounted for 2.6% of the variance in loan advances. The F statistic of 0.373 was insignificant at 5% level. This means that the model was not fit to explain the relationship. The loan advances growth model SPSS output are also shown in appendix 6.

4.2 Summary of Findings and Interpretations

The objective of this study was to establish the relationship between financial innovations and the growth of commercial banks in Kenya. The results show that financial innovation had positive but insignificant effects on all the measures of banking growth. At 5% level of confidence, none of the effects was significant. This means that financial innovations in banks in Kenya did not significantly influence growth of commercial banks. These results are inconsistent with various studies such as Makini (2010) and Githakwa (2011) in Kenya and Abir and Chokri (2010) in Tunisia.

The results also showed that financial innovation accounted for 2.4% of variance in revenues. 18% of variance in pre-tax profits. 2.8% of variance in customer deposits, and 2.6% of variance in loan advances. These results suggest that growth of banks was influenced by other factors other than financial innovations in banks. Further, the ANOVA showed that none of the models used in the study was statistically significant at 5% level. This suggests that the models were not fit to explain the relationship between financial innovation and growth.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study in section 5.2, conclusion in 5.3, limitations of the study in 5.4. recommendations in 5.5, and suggestions for further research in 5.6.

5.2 Summary

This study intended to determine the relationship between financial innovations and the growth of commercial banks in Kenya, in order to do this, the research was designed as a correlation study where relationships were tested. The population comprised of 43 commercial banks in Kenya as at December 2011 and all of them formed the sample size. Both primary and secondary data were used in the study with the primary data being collected using questionnaires while secondary data was collected from the financial statements of banks. Data from 32 (74.4% response rate) banks was collected and analysed using descriptive analysis, correlation analysis, and regression analysis.

The study found that 75% of the banks surveyed were local while 25% were foreign. This mirrors the banking composition in Kenya. The results also show that the most adopted innovations were ATMs, branch network expansions, and e-banking/internet banking as all the banks had adopted them. Further, other major financial innovations were debit cards (94%). mobile banking (94%). core banking operating systems (81%). personal

unsecured loans (69%), mortgage related products (63%), SMS banking (63%) and credit cards (56%). The least adopted was Islamic banking products (13%).

From the correlation analysis, it was noted that financial innovation did not have any significant correlations with growth variables at 5% level of confidence. These results are confirmed by the regression analysis which showed that financial innovation had a positively but insignificantly influenced growth factors - revenues, pre-tax profits, customer deposits, and loan advances. Further, none of the growth models was significant from the ANOVA analysis as the p-values of the F statistics were greater than 5%.

5.3 Conclusion

The study concludes that financial innovations of commercial banks in Kenya do not affect growth of banks. From the results, though the effects were positive, the results were insignificant at 5% level. Thus bank financial innovations in Kenya have not led to their growth in terms of revenues, pre-tax profits, customer deposits, and loan advances.

5.4 Limitations of the Study

The study intended to cover 43 commercial banks but only managed to get responses from 32 banks. The responses were therefore less than were expected. However, this response rate is not very low and therefore the results are reliable.

Secondly, the study focuses on commercial banks in Kenya. The results are therefore applicable only to commercial banks in Kenya and any attempt to generalise findings to other firms outside this scope should be approached with care.

Lastly, the study focused on financial innovations of banks as a concept. The innovation aspect should therefore be limited to financial innovations in the banking sector in Kenya.

5.5 Recommendations for Policy

The study makes a number of recommendations. First, the study recommends that there is need for commercial banks to introduce more innovations in order to gain from the advantages that come with such innovations. For instance, more credit and debit cards need to be adopted in the industry as not all banks have them.

There is need for more product developments as opposed to technological innovations in the banking industry. So far. Islamic banking products and insurance products were very limited. These are the innovations can spur more growth in banks and therefore more of them should be introduced.

5.6 Suggestions for Further Research

This study can be replicated in the insurance industry to establish what financial innovations are available and how they impact on firm performance. Further studies can also be carried out to establish the growth of financial innovations in the banking industry in Kenya.

A study of similar nature should also be done in the microfinance industry as well as in cooperative societies to establish what financial innovations they have adopted and whether such innovations have affected their growth.

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APPENDICES

Appendix 1: Research Questionnaire

The **Role of Financial Innovation on the Growth of Commercial Banks in Kenya**

This questionnaire is designed to evaluate the role of financial innovation on the growth of commercial banks in Kenya. The information collected from each questionnaire is to be used for academic purposes only and the responses will be treated with utmost confidentiality.

Section A: General company information

1. Name of your bank

2. Year of incorporation

3. Ownership (Please tick as appropriate)

   a) Local Public Commercial Bank [ ]

   b) Local Private Commercial Bank [ ]

   c) Foreign Commercial Bank {]

4. In how many countries does the bank have operation? Please state the number.

Scction B: Financial innovations

1. Please, tick as appropriate if your bank has introduced any of the following products in the recent past.

Description	Year introduced
a) Agency banking	
b) Automatic teller machines (ATM's)	
c) Branch network expansion	
d) Change in core banking operating systems	
e) Credit cards	
0 Debit cards	
g) E-banking / Internet Banking	
h) Islamic banking products	
i) Mobile banking	
j) Mortgage related products	
k) Insurance related products	
I) Personal unsecured loans	
m) SMS banking	

2. Please, indicate other Financial innovations not included above that have been introduced or implemented by your bank.

i)

ii)

i'i)

iv)

Appendix 2: List of Commercial Banks in Kenya

1. African Banking Corporation Ltd
2. Bank of Africa Kenya Ltd
3. Bank ofBaroda (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. Kenya
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 Kenya Ltd
16. Dubai Bank Kenya Ltd
17. Ecobank Kenya Ltd
18. Equatorial Commercial Bank Ltd
19. Equity Bank Ltd
20. Family Bank Ltd
21. Fidelity Commercial Bank Ltd

22. Fina Bank Ltd
23. First Community Bank Ltd
24. Giro Commercial Bank Ltd
25. Guardian Bank Ltd
26. Gulf African Bank Ltd
27. Habib Bank A.G. Zurich
28. Habib Bank Ltd
29. Imperial Bank Ltd
30. I & M Bank Ltd
31. Jamii Bora Bank Ltd
32. Kenya Commercial Bank Ltd
33. K-Rep Bank Ltd
34. Middle East Bank (K) Ltd
35. National Bank of Kenya Ltd
36. NIC Bank Ltd
37. Oriental Commercial Bank Ltd
38. Paramount Universal Bank Ltd
39. Prime Bank Ltd
40. Standard Chartered Bank Kenya Ltd
41. Trans-National Bank Ltd
42. UBA Kenya Bank Ltd
43. Victoria Commercial Bank Ltd

Appendix 3: SPSS Output for Revenues Growth Model

Model Summary-				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.155*	.024	-.046	659.26640
a. Predictors: (Constant), Financial innovation				

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.155*	.024	-.046	659.26640
a. Predictors: (Constant). Financial innovation				

ANOVA"						
Model		Sum of Squares	df	Mean Square	F	Sig.
I	Regression	149952.347	1	149952.347	.345	,566[b]
	Residual	6084850.604	14	434632.186		
	Total	6234802.951	15			
a. Dependent Variable: Revenues						
b. Predictors: (Constant). Financial innovation						

Appendix 4: SPSS Output for Pre-tax Profits Growth Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.424[a]	.180	.121	2221.51239
a. Predictors: (Constant), Financial innovation				

ANOVA"						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15158708.954	1	15158708.954	3.072	,102[b]
	Residual	69091642.258	14	4935117.304		
	Total	84250351.212	15			
a. Dependent Varia?le: Pre-tax profits						
b. Predictors: (Constant). Financial innovation						

Coefficients"						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3609.936	2796.408		-1.291	.218
	Financial innovation	541.223	308.812	.424	1.753	.102
a. Dependent Variable: Pre-tax profits						

Appendix 5: SPSS Output for Customer Deposits Growth Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.169"	.028	-.041	774.23893
a. Predictors: (Constant), Financial innovation				

ANOVA"						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	246136.344	1	246136.344	.411	.532[b]
	Residual	8392242.855	14	599445.918		
	Total	8638379.199	15			
a. Dependent Variable: Customer deposits						
b. Predictors: (Constant). Financial innovation						

Coefficients[2]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	183.141	974.601		.188	.854
	Financial innovation	68.966	107.627	.169	.641	.532
a. Dependent Variable: Customer deposits						

Appendix 4: SPSS Output for Pre-tax Profits Growth Model

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	.026	-.044	939.57988
a. Predictors: (Constant), Financial innovation				

ANOVA"						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	329671.368	1	329671.368	.373	.551[b]
	Residual	12359344.969	14	882810.355		
	Total	12689016.337	15			
a. Dependent Variable: Loan Advances						
b. Predictors: (Constant). Financial innovation						

Coefficients*						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	208.668	1182.730		.176	.862
	Financial innovation	79.815	130.611	.161	.611	.551
a. Dependent Variable: Loan Advances						

Financial Innovation Products for Selected Banks

Bank	Agency	ATM	Branches	Systems	Credit cards	Debit cards	e-banking	Islamic banking	Mobile banking	Mortgage	Insurance	Personal unsecured loans	SMS banking
ABC	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No
Barclays	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CFC	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	No	No	No
Chase	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
CBA	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	No
Consolidated Bank	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Coop bank	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Diamond Trust	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes
Ecobank	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Yes	No
Equity Bank	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Family Bank	No	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
I&M	No	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
KCB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
K-Rcp	No	Yes	Yes	No	No	Yes	Yes	No	Yes	No	No	Yes	Yes
NBK	No	Yes	Yes	No	No	Yes	Yes	No	No	No	No	Yes	Yes
NIC	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	No	No	No

Source: Author (2012)

Note: Yes means lhal the innovation was available while No means it was not available in the bank.