

**THE EFFECT OF FINANCIAL INNOVATIONS ON NON FUNDED
INCOME OF COMMERCIAL BANKS IN KENYA**

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DECLARATION

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

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DEDICATION

First, I would like to dedicate this study to my loving family, my dear husband Moses and daughter Marlyne who have been a constant source of inspiration, for their support, encouragement and patience during the entire period of my study and continued prayers towards successful completion of this course.

Secondly, I dedicate it to all those individuals, colleagues and friends who supported me during my study.

May God bless you all.

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ABSTRACT

To better apprehend the financial innovation process within the banking firm, this study intend to study the two types of financial innovation most commonly cited by the literature review, namely: product innovation and financial services innovation. Financial innovation has been indicated to affect economic growth and financial inclusion as well as boost the non funded income of commercial banks (CBK, 2011). Studies on financial innovation have been based other financial markets with little emphasis on the banking sector. This study aims at investigating the effects of financial innovations on non funded income in commercial banks in Kenya This study adopted descriptive design. Descriptive research design portrays an accurate profile of persons, events, or situations. The population of study consisted of all the 43 licensed commercial banks that registered with Central Bank of Kenya. The study adopted a census study approach. Owing to the depth inquiry nature of the study, secondary data was collected. The bank consolidated non funded income and exceptional items were obtained from CBK's annual bank supervision reports. Data to be collected was for 5 years from 2009 to 2013. Data was analyzed using the SPSS statistical package since it is best suited for providing a means of establishing quantitative association between variables. Given that the study, a multiple regression model of bank non funded income as the dependent variable versus independent variables of financial innovations such as online banking, mobile banking, automated cheques clearing and RTGs. The study established that there existed strong significance, positive correlation between financial innovation and non funded income (NFI) in commercial banks It can be concluded that adoption of these financial innovations had improved commercial banks income level and further improved their operations and earnings by increasing level of Non Funded Income. The financial innovations are not only adopted to increase their market coverage but also to improve the liquidity and also remain competitive in the market in the current turbulent business environment. This study also concluded that commercial bank investing in financial innovations has improve on new products development and technological innovations such as mobile banking, online banking, automated cheques clearing and agency banking increasing interest earnings, deposit interest increase and increase to a great extent level of Non funded Income. The study concluded that there existed a strong significant correlation between online banking, Mobile banking, Automated Cheques clearing and Value of sector RTGS commercial banks in Kenya. Based on the findings and conclusions of the study the following recommendations have been suggested in relations to financial innovations. There is need for commercial banks in Kenya to adopt new financial innovations such as Mobile banking, Online banking, since this has provided the benefit of constant access to certain core services reducing the need to interact with bank staff for many people

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LIST OF ABBREVIATIONS

ACC	-Automated Cheque Clearing
ATM	-Automated Teller Machine
ATMIA	-ATM Industry Association
CBK	-Central Bank of Kenya
CDO's	-Collateralized Debt Obligations
EFTs	-Electronic Fund Transfer
MB	-Mobile Banking
NFI	-Non Funded Income
OB	-Online Banking
ROA	-Return on Assets
RTGs	-Real Time Gross Settlement
US	-United States

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Financial services firms provide the payment services and financial products that enable households and firms to participate in the broader economy. By offering vehicles for investment of savings, extension of credit, and risk management, they fuel the modern capitalistic society Fender & Gibson, (2001). While the essential functions performed by commercial banks have remained relatively constant over the past several decades, the structure of the industry has undergone dramatic change. Liberalized domestic regulation intensified international competition, rapid innovations in new financial instruments, and the explosive growth in information technology fuel this change Wagner, (2007).

With this change has come increasing pressure on managers and workers to dramatically improve productivity and financial performance. Competition has created a fast-paced industry where firms must change in order to survive. Financial innovation in the banking industry has been spurred on by the forces described by Niehans, (2003) particularly in terms of new distribution channel systems, such as internet and mobile banking. As the industry has provided more ways for consumers to access their accounts, they have added significant costs to each institution. A need to combat these costs resulted in a major cost savings period, where many banks successfully got much of the cost out of the back office. These cost savings came largely through back office automation, which is a technological innovation that has recently been completed. Now, after adding significant

costs through added distribution channels and cutting as much as possible in the back office, banks have realized that the key to profitability is through revenue enhancement Mabrouk & Mamoghli, (2010). Banks are now forced to consider new ways to drive revenue through their distribution system. The most common way to classify this is through the drive to increase the customer share of wallet. The share of wallet is the portion of a customer's entire financial relationship that any particular bank has with the customer. The primary revenue-enhancing innovations occurring today are in platform automation for branch and phone center employees, and in the newest distribution channel, internet and mobile banking. While these innovations have aspects in common, they each serve different needs in the distribution strategy of commercial banks Mansury & Love, (2008).

1.1.1 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. When defining financial innovation the usual approach is to categorize it into three groups, according to where innovations occur.

According to Turfano (2003), financial innovation is the continuous development of new products, services, and technology to deliver services and products. Financial innovation is the catalyst behind the evolving financial services, industry and restructuring of financial markets. It represents the systematic process of change in instruments,

institutions, and operating policies that determine the structure of financial system. McConnel & Shwarch (1992) state that innovations take the form of new securities, and financial markets, new products and services, new organizational forms, and new delivery systems. Financial innovation is about change, an ever –present feature of a bank life, it is not how many ideas there are but how many ideas are implemented Gitonga, (2003).

In response to tight regulations imposed by the regulators the banks have come up with new services, products, and technologies to circumvent the government’s regulations and in return the government introduces more regulations to counter the new discoveries. Kane (1984) describes this process of avoiding regulations as “loophole mining”. The economic analysis of innovation suggests that when the economic constraints change such that regulations are made by avoiding them, loophole mining and innovation are more likely to occur.

1.1.2 Non Funded Incomes

Non-Fund Based Income is earned by providing a variety of services, such as trading of securities, assisting companies to issue new equity financing, securities commissions and wealth management, sale of land, building, and profit and loss on revaluation of assets. Bank and creditor income derived primarily from fees De Young, Hunter, & Udell, (2004). Examples of non-interest income include deposit and transaction fees, insufficient funds (NSF) fees, annual fees, monthly account service charges; inactivity fees, check and deposit slip fees. Institutions charge fees that provide non-interest income as a way of generating revenue and ensuring liquidity in the event of increased default rates Stiroh, (2004). In the face of declining net interest margins, depository institutions have entered

new product areas over the past two decades, moving from traditional lending to areas that generate Non-fund Based Income. The change is of importance for financial stability. The more unstable is a bank's earnings stream, the more risky the institution is. The conventional wisdom in the banking industry is that earnings from fee-based products are more stable than loan-based earnings and those fee-based activities reduce bank risk via diversifications De Young & Hunter, (2003).

Apart from accepting deposits and lending money, Banks also carry out, on behalf of their customers the act of transfer of money both domestic and foreign De Young & Roland, (2001) from one place to another. This activity is known as remittance business. Banks issue Demand Drafts, Banker's Cheques, and Money Orders for transferring the money. Banks also have the facility of quick transfer of money also known as Telegraphic Transfer. In return for having rendered this service, the Banks charge a pre-decided sum known as exchange or commission or service charge.

1.1.3 Effects of Financial Innovation on Non-Funded Income

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 & Woldesenbet, (2006). In a highly turbulent environment, a successful financial innovation creating a unique competitive position can give a bank a competitive advantage and lead to a superior financial returns Lyons & Chatman (2007). This can only be maintained by ceaseless innovation and improvement of the product and the process Porter, (2004). Niehans, (2003) argue that the relevant aspects of technological change include innovations that

reduce costs related to the collection, storage, processing, and transmission of information, as well as innovations that transform the means by which customers' access bank services. Advances in information and communications technology for example, the Internet.

Automatic Telling Machines (ATMs), new intermediation technologies for processes like loan securitization and credit scoring, and the introduction and expansion of financial instruments and markets high yield bonds, commercial paper, financial derivatives all impacted on the levels and types of non-interest income at commercial banks, and as was mentioned in the preceding paragraph, were helped by the process of deregulation Merton, (1990). In essence, these changes meant that banks could extract fee income from customers who were willing to pay for use of ATMs and /or the Internet rather than undertake business at traditional branches. In addition, loan securitization enabled banks to better leverage their equity capital by moving loans off balance sheets. By reducing the amount of deposit funding necessary to originate a dollar's worth of new loans, loan securitization decreases the importance of intermediation in favor of non-interest income .Moreover, greater access to the commercial paper market, although depriving larger banks of large denomination, high quality, short term Mabrouk & Mamoghli, (2010)

Mansury & Love (2008) noted that financial innovations such as securitization change the ex-ante incentives of financial intermediaries to carefully screen and monitor the borrowers Allen & Carletti, (2006). Wagner (2007) shows that financial innovation that reduces asymmetric information can actually increase risk-taking due to agency problems between bank owners and managers, or because of lower costs of fragility and increase

non interest income. In the context of the recent lending boom and subsequent Global Financial Crisis, several authors have pointed to distortions introduced by financial innovations, such as securitization and new derivative securities, and how they have contributed to aggressive risk taking, reduction in lending standards and thus fragility increasing level of non funded income in the commercial banks in US (Gennaioli, Shleifer & Vishny, (2012). Henderson & Pearson (2011) provide evidence that financial innovations help banks and investment banks design structured products to exploit investors' misunderstandings of financial markets.

1.1.4 Commercial Banks in Kenya

In Kenya, the Banking Sector is composed of the Central Bank of Kenya, as the regulatory authority and the regulated; Commercial Banks, Non-Bank Financial Institutions and Forex Bureaus. Kenya's banks like other organizations are open systems operating in a turbulent environment; their continued survival depends on the ability to secure a "fit" with the environment Pearce & Robinson (1997), Thompson & Strickland 1996). There have been significant developments in the structure of the Kenyan financial services sector in the past one decade. Until the early 1990s functional demarcation was predominant with many regulatory restrictions imposed and poor economic growth, one main consequence being limited competition both domestically and internationally. As a result there was heavy reliance on traditional branch-based delivery mechanisms in retail banking, with little pressure for change CBK, (2008).

Over the last few years, the Banking sector in Kenya has continued to growth in assets, deposits, profitability and products offering. The growth has been mainly underpinned by

an industry wide branch network expansion strategy both in Kenya and in the East African community region and automation of a large number of services and a move towards emphasis on the complex customer needs rather than traditional 'off-the-shelf' banking products. Players in this sector have experienced increased competition over the last few years resulting from increased innovations among the players and new entrants into the market CBK, (2008). Financial systems innovations include RTGS, a Kenya Electronic Payment and Settlement System in which both processing and final settlement of fund transfer transactions take place on an item by item (gross) basis continuously throughout a business day. It is an on-line system that facilitates the transfer of high value and/or time critical payments between participants in real time and aims at enhancing efficiency by reducing inherent risks in traditional payment System such clearing house CBK, (2011).

1.2 Research Problem

Financial innovation occurs as a result of many reasons which include regulations and taxes imposed on the financial institutions by the governments through the central bank. Competition, technology, globalization, volatility of interest rates, commodity prices and exchange are other reasons why financial innovations occur Frame & White, (2004). Financial innovations have led to reduction in risk, costs and have increased efficiency amongst the industry players. However, according to the recent innovation-fragility view, financial innovation have a dark side and has identified financial innovations as the root cause of the recent Global Financial Crisis Brunnermeier, (2009), which is a challenge to

banks non funded earnings. Despite the benefits outlined, there is need to establish the effects of financial innovations in the Kenyan banking sector growth.

The business environment has changed and it has been characterized by stiff competition among the players and the banking industry in Kenya is no exception. Competition amongst the commercial banks has pushed the banks towards becoming more innovative. Oloo (2004) asserted that banks have realized that to stay ahead of competitors they have to improve their existing products or come up with completely new innovations.

Some research studies have been conducted on financial innovations. Foreign studies include Henderson & Pearson (2011) who conducted a study to establish the dark side (setbacks) of financial innovation while Frame & White (2009) conducted a study on how technological change and financial innovations are diffused in banks. Despite the undeniable importance of financial innovation in explaining non funded income, the impact of innovation on performance, is still misunderstood for two main reasons. Although studies have been carried out on the contribution of financial innovation to the effectiveness of the monetary policy; few studies have sought to relate financial innovation to financial performance in the banking sector. Most of the existing studies also adopt a simplistic approach to the innovation-performance relationship which does not take into account the antecedents to innovation inside and outside the banking organization, all of which could influence this relationship.

Furthermore, in spite of an extensive descriptive literature on financial innovation, there is a paucity of empirical studies on financial innovation and its effect on performance of

the innovators. Most of the existing empirical works have focused on the same handful of financial innovations Stroh, (2004). Noyer (2007) states that despite a growing literature developed on financial innovation; these are mainly innovations of securities on financial markets. To better apprehend the financial innovation process within the banking firm, this study intend to study the two types of financial innovation most commonly cited by the literature review, namely: product innovation and financial services innovation. Financial innovation has been indicated to affect economic growth and financial inclusion as well as boost the non funded income of commercial banks CBK, (2011). Studies on financial innovation have been based other financial markets with little emphasis on the banking sector.

Locally, Mwangi (2007) carried out a study on Factors Influencing Financial Innovation of Companies listed at Nairobi Stock Exchange. Kamotho (2009) study on mobile phone banking usage experience observed that competition triggers innovation and creativity. Koech, (2009) looked at the role of E-Banking as an innovation on general service delivery and customer satisfaction. However, none of these studies looked at how financial innovations impacts on commercial banks growth bearing in mind that the new innovation-fragility view shows that financial innovations are the root cause of the recent financial crisis in most economies. This study will therefore seek to fill that gap by investigating; do financial innovations affect the non funded income of commercial banks in Kenya?

1.3 Objective of the Study

This study aimed at investigating the effects of financial innovations on non funded income in commercial banks in Kenya.

1.4 Value of the Study

The study findings are expected to be of great significant to stakeholders in the banking industry to make appropriate decisions towards adoption of financial innovation. They will understand the benefits and challenges of adopting innovations in their financial institutions. The study findings will prove to be important to commercial banks in Kenya, other organizations in the country, policy makers in banking and financial services and in scholarship.

This study would add more knowledge on the concept of financial innovation and give more empirical findings on the relationship between financial innovation and non funded income. This would provide more literally material which would be of value to scholars, students and researchers. This study could also be used as a basis of further research and also in academics in the area of financial innovation and deepening in developing nations.

This study would provide more insight on the effect of financial innovation on non funded income. This would provide management of commercial banks and firms in financial services with more insight on the importance of financial innovation not only to the economy but to the banks's non funded income.

The findings can further be applied by policy makers in the area of financial services innovation and banking. Financial innovations are touted as the way to improve financial

inclusion to drive economic development towards attainment of vision 2030. Policy makers can hence use the study findings to design policies that would encourage financial innovation but at the same time instilling effective regulatory environment.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter is concerned with the review of literature related to the study, the theoretical review and the conceptual framework. In the literature, it reviews other authors' works on financial innovations. The last section is the summary of the literature which points out the research gaps on the empirical studies done.

2.2 Theoretical Review

This section discusses the theories that are established by other researchers, authors and scholars and are relevant to financial innovations. The study specifically reviews the Silber's constraint theory of innovation, Kane's theory and Merton's market efficiency theory of innovation.

2.2.1 The Transaction Cost Innovation Theories

The main pioneers are Hicks & 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 in financial services. 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. This theory discussed the motive and the process of financial innovation from different sides. Desai & Low (1987) with the location theory thought that financial innovation is the method which can make the integrity of financial market come true. According to the Location Theory, they advanced the financial innovation microscopic economic model.

Desai & Low (1987) utilized this theory to confirm and measure the gap in the scope of acquirable product in financial market, which indicates the potential opportunity of the new products' innovation and promotion. Chen (1995) built the financial intermediacy model in which new security secured by old security is created. In the period of decomposing the old securities and opening new market, innovators play an influential economical role. For example, investors can obtain the consumption at lower cost; investors can realize a better share of risks. His model indicated that even when introducing the surplus securities which are not distributed yet, the innovators can also play these roles. In other words, although these innovations have not changed the scope of acquirable financial tools, it makes investor's trade at lower expected cost.

2.2.2 Market Efficiency Theory of Innovation

Merton (1990) also provides a valuable rationale for financial innovation. His theory is based on the notion that financial innovations are motivated by forces designed to increase market efficiency and improve social welfare. Merton argued that the market is not perfect hence financial institutions must innovate to improve market efficiency.

According to Rene (2000) financial economists generally view the flow of funds to take advantage of investment opportunities and financial innovations as positive forces that makes markets more efficient, facilitate risk sharing and increase growth. Many have argued that capital flows and financial innovations lead to instability, crashes and other disasters especially the 1987 crash and the derivative disasters in the 1990's but Merton was not convinced that financial innovation was to blame for the crashes.

Merton (1990) gives three motivations for producing innovations namely, the creation of new financial structures that allow risk sharing, risk pooling and hedging as well as new financial structures for transferring resources, the improvement of economic efficiency and liquidity and reduction of agency costs.

2.2.3 Circumvention Innovation Theory

Kane (1981) is the pioneer of circumvention innovation theory. He postulated that many forms of government regulations and controls, which have 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.

Because financial industry is special, it has the stricter regulations. 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. 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. This theory not only considered the origin of innovation in the market but also explained the process of regulation innovation and their dynamic relation.

2.3 Determinants of Financial Innovation

Financial innovations involving derivatives can improve efficiency by expanding opportunities for risk sharing, lowering transaction costs and reducing asymmetric information and agency costs Merton (1995). Financial innovations promote economic growth by allocating capital where it can be most productive Iftekhar, Schmiedel & Song, (2009).

2.3.1 Automated Teller Machines (ATMs)

Automated Teller Machines (ATMs) combines a computer terminal, record-keeping system and cash vault in one unit, permitting customers to enter the bank's book keeping system with a plastic card containing a Personal Identification Number (PIN) or by punching a special code number into the computer terminal linked to the bank's computerized records 24 hours a day Stanley, (2006). Once access is gained, it offers several retail banking services to customers Rose, (1999). They are mostly located outside of banks, and are also found at airports, malls, and places far away from the home bank of customers.

Cohen (1995) in his study in the British banking sector found that Automated teller machines (ATMs), which were introduced in the early 1970s and diffused rapidly through the 1980s, significantly enhanced retail bank account access and value by providing customers with around-the-clock access to funds. ATM cards were then largely replaced through the 1980s and 1990s by debit cards, which bundle ATM access with the ability to make payment from a bank account at the point-of-sale Mishkin, (2002).

2.3.2 Online Banking

Online Banking is systems that enable bank customers to access accounts and general information on bank products and services through a PC or other intelligent device or any banking activity held on Internet Mathias & Sahut, (1999). Online banking is an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. Online banking is also referred as Internet banking, e-banking, virtual banking and by other terms. To access a financial institution's online banking facility, a customer with Internet access would need to register with the institution for the service, and set up some password (under various names) for customer verification. Online banking gives customers access to their bank accounts through a website Nzuki, (2006). Internet banking offers more convenience and flexibility to customers with absolute control over their banking activities.

Online Banking was thought to signal a revolution in banking distribution. Banks invested heavily in the development of the Internet channels (Accenture, 2005). Internet Banking has experienced explosive growth in many countries and has transformed

traditional banking practice Mols, (1999). Inevitably, Internet Banking will continue to revolutionize the current traditional banking industry and offers more opportunity to meet better consumer services through enhanced interaction, data mining and customization in the Internet Banking services Hamid et al, (2007)

2.3.3 Real time gross settlement systems (RTGS)

Real time gross settlement systems (RTGS) are specialist funds transfer systems where transfer of money or securities takes place from one bank to another on a real time and on gross basis Mols, (1999). Settlement in real time means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. Gross settlement means the transaction is settled on one to one basis without bunching or netting with any other transaction. Once processed, payments are final and irrevocable Accenture, (2005).

RTGS systems are typically used for high-value transactions that require immediate clearing, in some countries the RTGS systems may be the only way to get same day cleared funds and so may be used when payments need to be settled urgently such as when purchasing a house. However most regular payments would not use a RTGS system, but instead would use a national payment system or network that allows participants to batch and net payments Craigwell, And Maxwn, (2005).

RTGS systems are usually operated by a country's Central bank as it is seen as a critical infrastructure for a country's economy. RTGS is Electronic Payment and Settlement

System in which both processing and final settlement of fund transfer transactions take place on an item by item (gross) basis continuously throughout a business day. It is an on-line system that facilitates the transfer of high value and/or time critical payments between participants in real time

2.5 Empirical Studies

Various studies on financial innovation have been undertaken; most noted been Turfano (2002) survey on financial innovation from a wide variety of disciplines. Tufano, (1989) longitudinal study between 1974-1986 on Financial Innovation and first mover advantages. Whose data was collected from a population of 1,944 publicly traded securities, and a sample of 58. With an aim of establishing whether investment banks that create new securities benefits by charging higher prices (underwriting charges) than imitators or by capturing large quantities. He concluded that investment banks that created new financial products did not charge higher prices in the period before imitative products appear and in the long run charges lower than rivals. However these innovators did underwrote more public offerings that they innovated, than did the imitating rivals. Overall, Tufano's results was not consistent with monopoly pricing of new securities issues by innovators, but rather with the presence of cost advantages that allow these institutions to capture market shares.

Craigwell, & Maxwn (2005) investigated a study on impact of non Interest Income and Financial Performance at Commercial Banks in Barbados .This study discussed the trends in non-interest income at commercial banks in Barbados between 1985 and 2001, as well as investigates the determinants of non-interest income and its impact on commercial

bank financial performance. The study revealed that the incidence of non-interest income in Barbados declined over the period, contrary to the findings in Jamaica and Trinidad and Tobago as well as the wider developed world. A review of the literature and a panel data regression model confirmed that the result for Barbados may be attributed to the absence of some of the factors that were pinnacle to the generation of noninterest income in developed countries, such as deregulation and technological change, especially for the development of loan securitization and credit scoring. The empirical evidence supports bank characteristics and the ATM technology as the most influential factors shaping the trend of non-interest income in the banking industry in Barbados and suggests that non-interest income is positively related to both bank profitability and earnings volatility.

Furst, Lang, & Nolle (2002) analyze survey data on Internet banking as of the third quarter of 1999. Using logit models, they found that a bank's choice of adopting Internet banking is related to holding company affiliation, location in an urban area, higher fixed expenses, and higher non-interest income. Among banks that offer Internet-related services, a greater number of service offerings were positively related to bank size and the length of time offering Internet banking. Sullivan (2000) compares banks in the 10th Federal Reserve district¹⁹ that had transactional Internet websites as of the first quarter of 2000 to those that did not have such web-sites. He finds the former to be significantly larger and located in areas with a more educated population and a higher population fraction in the 18 to 64 age group. Banks offering transactional Internet web-sites are also found to have higher non-interest expenses and higher non-interest income.

DeYoung and Roland (2001) suggests three reasons why noninterest income may increase the volatility of bank earnings. First, most bank loans are relationship based and as a result have high switching costs, while most fee-based activities are not relationship based. Thus, despite credit risk and fluctuations in interest rates, interest income from loans may be less volatile than noninterest income from fee-based activities. Second, within the context of an ongoing lending relationship, the main input needed to produce more loans is variable (interest expense); in contrast, the main input needed to produce more fee-based products is typically fixed or quasi fixed (labor expense). Thus, fee-based activities may require greater operating leverage than lending activities, which makes bank earnings more vulnerable to declines in bank revenues.

Akhavein *et al* (2005) proposed a model for assessing the business value of e-banking distribution channels which applies five perspectives in Latin America, customer, marketing, finance, technology, and strategy perspectives. These perspectives were used to evaluate business value along two viewpoints, internal and external. The internal view means that the e-banking distribution channel is considered as a resource providing efficiency, effectiveness, market expansion, and competitive advantages to the financial service provider. Business value from the external view derives from the customer viewpoint, and is measured by the extent to which the e-banking channel supports the relationship between the bank and its customer. In their study on the diffusion of financial innovation through an examination of the adoption of small business credit scoring by large banking organizations in Latin America and found that large banks that adopted

small business credit scoring performed well financially than those banks that used conventional ways.

Mwangi (2007) carried out a study on Factors Influencing Financial Innovation of Companies listed at Nairobi Stock Exchange with objective of explaining the macro-environmental and micro-environmental factors influencing financial innovation in Kenya's securities market. He studied a population of all 48 companies listed on the Nairobi Stock Exchange in 2005. The study concluded that Kenyan laws protecting investors was the major factor influencing financial innovation. This result is similar to the finding by Frame & White (2002). Further, the research finding showed that unstable forex rates were the most important factor influencing financial innovation among market volatility factors. Mwangi also observed that the absence of automated trading systems as a technological factor was found to influence financial innovations regularly. Finally he argued that global financial competition and integration had an influence on financial innovation with increased financial competition amongst financial institutions influencing financial innovation the most.

Kamotho (2009) conducted a study on effects of Mobile Phone Banking usage experiences in Kenya. Across two main dominant mobile banking service providers- Safaricom and Zain - during the three year period 2006-2008, from inception with total outlets of 8000 agents. This number tripled compared to 876 branches and 1424 ATM for commercial banks (CBK, 2008). He observed that competition triggers innovation and creativity. Continuous innovation not only yield new products but rather promotes efficiency in the performance of activities. Contrary to popular wisdom that mobile phone

money services are meant for funds transfer and remittances, his findings concluded that 96% of the respondents used the M-banking service as form of funds storage.

Koech (2009) on her study on E-banking services in commercial banks identified E-banking as one of the financial innovations in Kenya, she identified the benefits of E-banking to include: saving time, and providing convenience to customers. She also identified security and cost concerns as the major challenges facing E-banking.

Nyathira (2012) investigated effects of financial innovation and its effect on financial performance of commercial banks in Kenya .The objective of the study was to assess the effect of financial innovation on commercial bank's financial performance as the key players in the banking sector over a period of 4 years. Kenya's financial sector has undergone significant transformation in the last few years. The study adopted causal research design and the population of study was all the 43 commercial banks in Kenya .The study used secondary data from published central banks' annual reports. The independent variable was financial innovations unique to commercial banks while dependent variable was consolidated financial performance of all banks. Study results indicated that financial innovation significantly positive correlated to profitability in the banking sector particularly that of commercial banks. This is further supported by high uptake of more efficient financial systems in substitution for the less efficient traditional systems. This is evidenced by the negative correlation between Real Time Gross Settlement and Automated Clearing House (Cheques & EFTs) throughput over time; as well as that of profitability and Automated Clearing House throughput.

Muia (2013) determine the relationship between financial innovation and growth in profitability of Islamic banking in Kenya .The objective of this research study was to assess the relationship between financial innovation in Shariah compliant financial products and services and profitability of Islamic banking in Kenya. This study targeted eight (8) commercial banks that operate Islamic banking in Kenya. It covered the period between 2009 and 2012. Specifically, the study sought to establish the relationship between Islamic financial innovations and banking profitability. The return on Assets (ROA) was used to measure profitability and was calculated by dividing the banks' net profit before taxation by the total assets held by the bank over the study period. Financial innovation was measured by Number of Islamic debit and credit cards issued by Islamic banks, Contribution of agency banking, internet banking and mobile banking to income generated from Islamic banking, Number of new Shariah compliant financing facilities, Maintenance cost of Islamic debit and credit cards and Margin generated from Islamic debit and credit cards. The data for this study was collected using questionnaires for primary data study and secondary data was obtained from the Central Bank of Kenya annual reports. Out of the eight banks targeted, six responded which represented a response rate of 75%.A regression analysis on each of the Islamic banking innovations above individually against the bank's profitability (ROA) revealed that there is a very weak relationship between individual innovations and profitability. The study results showed that bank innovations have a moderate influence on profitability of Islamic banks in Kenya. The study recommended that banks offering Shariah compliant financial services should focus their efforts on financial innovations. The more the financial innovations a bank is able to adopt, the more its chances of enhancing its profitability

2.6 Summary of Literature Review

From the review of literature, there has been a surprising dearth of empirical studies that test hypotheses with respect to financial innovation in general and its effect on financial performance. Instead, the comparatively few empirical studies that have been done tend to focus on the characteristics of users/adopters of innovations – sometimes on a cross-sectional basis and other times in the context of the diffusion of the innovation. Other studies that have been done linking innovation and performance in developed countries US, Latin America or Europe. In their examination of the dynamic of financial innovation in the banking industry in the U.K, Batiz-Lazo & Woldesenbet (2006) stipulated that a distinction between product innovation and process innovation is necessary as much as the adoption of each type of innovation has its own characteristics and has a different impact on banking performance. Although many studies have been done on financial innovation in many aspects most have focused on funded income and profitability in banks while others have focused on linking financial innovations and financial performance. There is no notable study that has been done in Kenya to show the effects of financial innovations on non funded income in Kenya and this is what this study sought to establish.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology to be adopted by the researcher in carrying out the study. The chapter presents the population to be studied, the methods used to sample it, the instruments used in data collection and procedures that was used in data analysis.

3.2 Research Design

This study adopted descriptive design. Descriptive research design portrays an accurate profile of persons, events, or situations (Robson, 2002). The descriptive design allows the collection of large amount of data from a sizable population in a highly economical way. It allows one to collect quantitative data, which can be analyzed quantitatively using descriptive and inferential statistics.

The descriptive survey was deemed the best design to fulfill the objectives of this study. Robson (2002) points out that descriptive study portrays an accurate profile of persons, events or situation. Descriptive study describes the existing conditions and attitudes through observation and interpretation techniques. These writer claim the descriptive research design is one of the best methods for conducting research in human contexts because of portraying accurate current facts through data collection for testing hypothesis or answering questions to conclude the study.

3.3 Study Population

A population is a group of individuals, persons, events, objects or items from which samples are taken for measurement, it is the group the investigator wishes to make inference from (Saunders (2003) .The population of study consisted of all the 43 licensed commercial banks that are registered with Central Bank of Kenya . The study adopted a census study approach. According to Cooper & Schindler (2007) a census is feasible when the population is small and necessary when the elements are quite different from each other. When the population is small and variable, any sample draw may not be representative of the population from which it is drawn. Therefore since the target population for this study was small, census study was done since population was small and the institutions are easily assessable.

3.4 Data Collection Procedures

Data collection is gathering empirical evidence in order to gain new insights about a situation and answer questions that prompt undertaking of the research Flick, (1998). The study utilized secondary data only. Owing to the depth inquiry nature of the study, secondary data was collected. The bank consolidated non funded income and exceptional items were obtained from CBK's annual bank supervision reports. The independent variables, automated clearing house throughput and RTGS turnovers was obtained from CBK's annual statistics presented under payments systems statistics, retail payments section. The main sources of secondary data were financial statements of the commercial banks. Data to be collected was for 5 years from 2009 to 2013.

3.6 Data Analysis

Data was analyzed using the SPSS statistical package Version 21 since it is best suited for providing a means of establishing quantitative association between variables. Given that the study, a multiple regression model of bank non funded income as the dependent variable versus independent variables of financial innovations such as online banking, mobile banking, automated cheques clearing and RTGs.

The general equation relating the dependent and independent variables took the form;

$$Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where; Y = Non Funded Income, α_0 =Constant, B1, B2, B3, and B4 are constants to be determined for years 1 to 5 while X1, X2, X3, and X4 represents financial innovation variables.

The Y's and X's are the data quantities gathered from the population in question α_0 and β s unknown parameters (constants) to be estimated from the data. In this research however, the parameters were the following definition of expressions.

The model will be

$$NFI = A + \beta_1 OB + \beta_2 MB + \beta_3 ACC + \beta_4 AB + e,$$

Where;

NFI = Non Funded Income as a percentage of assets in commercial banks

OB S= Online banking

MB = Mobile banking

ACC = Automated Cheques Clearing

RTGs = Value of sector RTGS transfers for year1...n

E, = Standard error term e is poised to be normally distributed. 1.

Online banking, OB and mobile banking, MB was measured using a ratio of total Mobile banking deposit income over total income attributed. Automated cheques clearing, ACC was measured using a ratio of total income attributed to ACC cheques cleared and total per annum while RTG was measured using the RTGs income attributed to RTGS over and total income per annum. The F-test was tested for joint significance of all coefficients and t-test for significance of individual coefficients at 95 confidence level of 0.05 significant level.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATIONS

4.1 Introduction

This chapter presents the findings of the study based on the data collected from the field. The study sought to determine the effects of financial innovations on non funded income of commercial banks in Kenya. The study used the secondary data which included the balance sheets and profit and loss accounts of the commercial banks for a period of five years.

4.2 Data Collection and Analysis

The study sought to collect and analysis consolidated data from the 43 commercial banks in Kenya. Secondary data obtained from reports published by the Central Bank of Kenya; which is also the regulator of the banking sector was used. Dependent variable, Consolidated Commercial banks' profit after tax and exceptional items was obtained from CBK's annual bank supervision reports. Non Funded Income as a percentage of assets in commercial banks (NFI) from non financial banking institutions was excluded from the total banking sectors NFI to obtain NFI from commercial banks. The independent variables; Online banking, Mobile banking, automated clearing house throughput and RTGS turnovers were obtained from CBK's annual statistics presented under retail payments. A study period of 5 years, 2009 to 2013 was used.

4.3 Correlation Analysis

Table 4. 1: Correlation between Profit, Automated Clearing and RTGS

		NFI	RTGS	Automate d cheques clearing	MBT	OLB
	Pearson Correlation	1				
Non Funded Income	Sig. (2-tailed)	0.000				
	N	43				
RTGS	Pearson Correlation	.725*	1			
	Sig. (2-tailed)	.0001	0.0015			
	N	43	43			
Automat ed cheques clearing	Pearson Correlation	.967*	.534	1		
	Sig. (2-tailed)	.033	.066			
	N	43	43	43	1	
MBT	Pearson Correlation	.667*	.534	0.569	0.618	
	N	43	43	43	43	
	Sig (2-tailed)	0.00021	0.001	0076	0.372	
OLB	Pearson Correlation	.5904*	.834	0.537	0.698	1
	Sig. (2-tailed)	0.001	0.123	.0046	.045	.069
	N	43	43	43	43	43

A partial correlation analysis using Karl Pearson correlation coefficient was performed. A positive coefficient indicated a positive relationship between the variables correlated. From the Table 4.4 .The study found that there existed significance strong and positive correlation between RTGS and and Non Funded

Incomes as Correlation coefficient $r=0.725$, $P=0.0001<0.05$. The study found that there existed a significant strong positive correlation between Non Funded Income and automated clearing turnover as the correlation coefficient $r=0.967$, $P=0.033<0.05$. This is significant at 5% significance level.

The study established that there existed a significant strong positive correlation between Non Funded Income and mobile banking transactions (MBT) in commercial banks as correlation coefficient $r=0.667$, $P=0.00021<0.05$. The study further established that there existed a significant strong positive correlation between Non Funded Income and Online banking transactions (MBT) in commercial banks as correlation coefficient $r=0.5904$, $P=0.001<0.05$.

4.4 Regression Model Summary

A regression analysis between the dependent variable and the independent variables was performed; independent variables being Online banking, Mobile banking transactions, value of sector RTGS transfers for year and value of sector automated clearing transactions for period. The dependent variable was banking sector's profit after tax & exceptional items for year.

Table 4. 2: Regression Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.788a	0.621	0.542	0.468

a Predictors: (Constant), Online banking, mobile banking, automated cheques clearing, RTGS transfers

Dependent: Non Income Fund

Results are as indicated in tables 4.1 to 4.4. Results in table 4.1 indicate that the r-squared for the model indicated that the coefficient of variation between variables was 0.621, which indicates that the independent variables could be used to explain about 62.7% of the variation in non funded income commercial banks. This indicates that the regression model has a significant strong explanatory power as only about 38% of variation in non funded income on the commercial banks is not explained by the model.

4.5 Analysis of Variances

Table 4. 3: Analysis of Variances in the Regression Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7407566.346	4	1.059	112.186	0.001a
Residual	372021.654	38	0.893		
Total	844479538.000	42			

Results in table 4.2 give the analysis of variances in the regression model. These results indicate that the model had an F-ratio of 112.186 which was significant at 6.6% level of significance. This result indicates that the overall regression model is statistically significant and is useful for prediction purposes at 95% significance level. This further indicates that the independent variables are statistically significant in predicting non funded income level in of commercial banks.

4.4 Regression Coefficients

Results in table 4.3 below present the test of the statistical significance of the independent variables in the model. This provides the estimates of independent variables, their standard error and the t-ratios.

Table 4. 4: Test of Significance of Independent Variables

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error			
(Constant)	56808.445	9502.845		5.978	.0106
Automated cheques clearing	.411	.001	.812	10.336	.0061
RTGS	.381	.000	.291	12.703	.0018
Mobile banking	.269	0.182	0.023	6.145	0.014
Online Banking	.239	0.273	0.246	1.461	0.001

From the regression analysis, the study established that there existed a significant positive relationship between Automated cheques clearing and non funded income in commercial banks as $r=0.411$, $p=0.0061 < 0.05$. The value of sector automated clearing transactions had a coefficient estimate of .011 which indicates that it had a negative relationship with profitability. The t ratio for value of sector automated clearing transactions was 10.336 which was significant at 95% level of significance. This indicates that value of sector automated clearing transactions is a significant predictor of profitability of commercial

banks. This indicates that as value of sector automated clearing transactions decrease, profitability increases.

The results indicate that the t-ratio for value of commercial bank RTGS transfers for year was 12.703. This t-ratio was significant at 95% level of significance (0.0018). The study found that there existed a significant positive relationship between RTGS transfers and non Funded Income in the commercial banks .The estimate of value of the commercial banks RTGS transfers for year was significant which indicates that value of the RTGS transfers in commercial banks was positively related to non funded income in commercial banks.

The study shows that there was a significant relationship between non funded income and online banking transaction of commercial banks as $r=0.239$, $p= 0.001<0.05$). The t-statistics ratio for value of online banking transaction was 10.336 which was significant at 10% level of significance. The study further found that there existed a significant relationship between non funded income and Mobile banking transaction of commercial banks as $r=0.269$, $p= 0.001<0.014$,). The t-statistics ratio ($t=6.145$) for value of mobile banking transaction was significant at 95% level of significance.

4.5 Discussion of the Findings

The study established that there existed strong significance, positive correlation between financial innovation and non funded income (NFI) in commercial banks. From the partial correlation analysis using Karl Pearson correlation coefficient was performed, the study

revealed that there existed significance strong and positive correlation between RTGS and Non Funded Incomes as Correlation coefficient $r=0.725$, $P=0.0001<0.05$.

The study found that there existed a significant strong positive correlation between Non Funded Income and automated clearing turnover as the correlation coefficient $r=0.967$, $P=0.033<0.05$. This is significant at 5% significance level.

The study established that there existed a significant strong positive correlation between Non Funded Income and mobile banking transactions (MBT) in commercial banks as correlation coefficient $r=0.667$, $P=0.00021<0.05$. The study further established that there existed a significant strong positive correlation between Non Funded Income and Online banking transactions (MBT) in commercial banks as correlation coefficient $r=0.5904$, $P=0.001<0.05$.

From the regression results indicated that there existed a significant coefficient of variation which indicated that there was a 62.7% of the variation in non funded income in the commercial banks ($r\text{-squared} = 0.627$). This is consistent with a study by Noyer (2007) which argued that financial innovation in the commercial banks had improve bank non funded income. Tidd & Hull (2003) further found that rapid innovations in new financial instruments, systems and explosive growth in information technology which have fuelled increase in Non funded income in financial institutions. The study results indicated that the t-ratio for RTGS throughput/to PATEI was 3.703, the ratio being significant at 10% level of significance which indicates that RTGS throughput is a significant predictor of Non funded income of commercial banks. While the t-ratio of

sector automated clearing transactions had a coefficient estimate of $-.011$ which indicates that it had a negative relationship with profitability.

From the regression analysis, the study established that there existed a significant positive relationship between Automated cheques clearing and non funded income in commercial banks as $r=0.411$, $p=0.0061 < 0.05$. The value of sector automated clearing transactions had a coefficient estimate of $.011$ which indicates that it had a negative relationship with profitability. The t ratio for value of sector automated clearing transactions was 10.336 which was significant at 95% level of significance. This indicates that value of sector automated clearing transactions is a significant predictor of earning of Non funded Income of commercial banks. This indicates that as value of sector automated clearing transactions decrease, profitability increases. The finding concurred with Kamotho (2009) who found that Mobile banking transactions improve income level in the commercial bank through earning of high interests as M-banking service in the banks increase bank funds storage.

From the finding t-ratio for value of commercial bank RTGS transfers for year was 12.703 . This t-ratio was significant at 95% level of significance (0.0018). The study established that there existed a significant positive relationship between RTGS transfers and non Funded Income in the commercial banks. The estimate of value of the commercial banks RTGS transfers for year was significant which indicates that value of the RTGS transfers in commercial banks was positively related to non funded income in commercial banks.

From the regression analysis, there was a significant relationship between non funded income and online banking transaction of commercial banks as $r=0.239$, $p= 0.001<0.05$). The t-statistics ratio for value of online banking transaction was 10.336 which was significant at 10% level of significance. The study further found that there existed a significant relationship between non funded income and Mobile banking transaction of commercial banks as $r=0.269$, $p= 0.001<0.014$). The t-statistics ratio ($t=6.145$) for value of mobile banking transaction was significant at 95% level of significance. The study concurred with CBK (2013) report which indicated that introduction of CTS, EFTs allowed transfers of more than Khs 1 Million through the ACH increasing bank interests level. With RTGS and ACH therefore acting as substitute payment and transfer system options, it would be expected that uptake of RTGS would result into a decline in usage of ACH.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the findings; the conclusion and the recommendations of the study which sought to establish effects of financial innovations on Non Funded Income of commercial banks in Kenya.

5.2 Summary of Key Findings

The study established that there existed strong significance, positive correlation between financial innovation and Non Funded Income (NFI) in commercial banks. From the partial correlation analysis using Karl Pearson correlation coefficient was performed, the study revealed that there existed significance strong and positive correlation between RTGS and Non Funded Incomes as Correlation coefficient. The study revealed that existed a significant strong positive correlation between Non Funded Income and automated clearing turnover, mobile banking transactions (MBT) and Online banking transactions (OBT) in commercial banks as correlation coefficient.

The study revealed that there existed a significant positive relationship between automated cheques clearing and non funded income in commercial banks. The study found that automated clearing transactions had a coefficient estimate of .011 which indicates that it had a negative relationship with profitability. The t ratio for value of sector automated clearing transactions was significant. This indicates that value of sector automated clearing transactions is a significant predictor of Non Income Funds of commercial banks. This clearly indicated that automated clearing transactions increase, Non Funded Income increases.

Mobile banking transactions was also found the significantly led to increase in Non funded income level in the commercial bank through earning of high interests as M-banking service in the banks increase bank funds storage. From the regression analysis, the study revealed that there existed significant relationship between non funded income and online banking transaction of commercial banks. The study further found that there existed a significant relationship between non funded income and Mobile banking transaction of commercial banks

5.3 Conclusions

It can be concluded that adoption of these financial innovations had improved commercial banks income level and further improved their operations and earnings by increasing level of Non Funded Income. The financial innovations are not only adopted to increase their market coverage but also to improve the liquidity and also remain competitive in the market in the current turbulent business environment. This study also concluded that commercial bank investing in financial innovations has improve on new products development and technological innovations such as mobile banking, online banking, automated cheques clearing and agency banking increasing interest earnings, deposit interest increase and increase to a great extent level of Non funded Income. The study concluded that there existed a strong significant correlation between online banking, Mobile banking, Automated Cheques clearing and Value of sector RTGS commercial banks in Kenya. Moreover, financial innovations contribute to improved performance as observed by the trend in terms of growth for the last five years since the banks adopted the financial innovations.

The study concluded that financial innovation in commercial banks led to convenience, efficiency and security to commercial banks customers resulting to more demand (uptake) for the new financial innovations. Demand for traditional payment systems reduces as customers switch to the more effective payment systems; this as seen by the negative correlation between Real Time Gross Settlement transactions turnover and Automated Clearing House.

5.4 Policy Recommendations

Based on the findings and conclusions of the study the following recommendations have been suggested in relations to financial innovations. There is need for commercial banks in Kenya to adopt new financial innovations such as Mobile banking, Online banking, since this has provided the benefit of constant access to certain core services reducing the need to interact with bank staff for many people.

Adoption of Technological innovations by the banks have prompted agreements to share systems through between banks and the development of cash points being installed in non-branch locations such as supermarkets to increase on bank customer deposits, earn interest changes on financial service delivery and earning of non funded interests such as withdrawals change interest. Hence there is need to adopt financial innovations to improve liquidity in banks. The study had shown that commercial banks that had adopted financial innovations had improved their liquidity. With shorter transaction turnaround times, transactions volumes can be significantly increased and by extension commission charges there from.

Government through the financial sector regulatory authorities, more so CBK, should encourage banks to engage in financial innovation but at the same time closely regulating such developments to assure on the integrity of more so the payment systems. Financial innovation is the engine of increase Non Funded Income. Faster and more secure payment systems spurs development of businesses and economic growth in all other sectors in addition to facilitating financial deepening

Adoption of financial innovations enables operations of commercial banks to more efficient through making financial services more available and at reduced costs. Allotting large sums of capital to financial innovation in banks will not only make it possible to provide the inputs required for innovation, but will also allow the bank to absorb the costs of innovation, as well as the costs arising from potential failures and thus will enable the bank to take more first mover initiatives in product/service and process innovation. The researcher recommends that banks seeking to improve their efficiency should increase their first mover initiatives in process innovation. Some financial innovations decrease risk and volatility associated with globalizing markets. With greater globalization, commercial banks are exposed to new risks such which financial innovations seek to manage.

5.5 Limitations of the Study

In conducting the study, the researcher encountered a number of challenges. One of the challenges was lack of cooperation from some of the banks who were unwilling to give information. This study was dependent on financial statements and records from commercial banks but some banks were unwilling to give such information. However, the researcher explained to the banks authorities that the sought information was just for academic purposes and would not be released to third party.

Another limitation was that, majority of the small banks, though they formed part of the sample size, some had not adopted some of the financial innovations such as agency and online banking unlike the banks in the first tier. This limited the information/ data collected from these banks and could not therefore form a clear comparison on the effect of financial innovations on growth of small and larger banks. The third challenge was limitation of information given by the banks. Some banks were secretive or rather limited the information they gave out. Some of the information such as number of transactions recorded, amount of deposits from specific transactions was not given. Some of this information was crucial for the study to make a formidable conclusion.

5.6 Recommendation For further Research

This study was concerned with financial innovation on non funded incomes of commercial banks in Kenya. However, financial innovations are being adopted in various financial institutions. Therefore, future studies should look at other institutions in the financial sector that have adopted financial innovation such as insurance companies and micro finance institutions for comparison of results.

This study depended solely on secondary data. The study recommends that future studies could also gather primary data from the staffs and the management so as to get their opinion and a better picture on the effects of financial innovations on profitability non funded income performance. The study found out that there has been increased adoption of financial innovations by the financial institutions. The researcher recommends that a further research should be conducted to establish

determinants of adoption of financial innovation among financial institutions in Kenya. The study should investigate both the internal and external factors influencing financial innovation adoption and the challenges thereof.

REFERENCES

- Akerberg, A. & Gowrisankaran, G. (2006). Quantifying equilibrium network externalities in the ACH banking industry, *RAND Journal of Economics*, 37(3), 738-761
- Allen, T., Franklin, J., & Carletti, E. (2006). Credit risk transfer and contagion. *Journal of Monetary Economics*, 53, 89-111
- Berkowitz, J. (2000). A coherent framework for stress testing, *Journal of Risk*, 2(2), 5-15.
- Brunnermeier, M. & Markus, K. (2009). Deciphering the liquidity and credit crunch 2007-2008. *Journal of Economic Perspectives* 23, 77-100.
- Central Bank of Kenya report (2013): <http://www.centralbank.go.ke>
- Cooper, D., & Schindler, P. (2006). *Business Research Methods*. 9th Ed. New Delhi: McGraw-Hill.
- Craigwell, R. & Maxwell, C. (2005) Impact of non Interest Income and Financial Performance at Commercial Banks in Barbados. *Chanelle Maxwell, Research Department, Central Bank of Barbados*, Bridgetown, Barbados.
- Davis, P. E. & K. Tuori. (2000) The Changing Structure of Banks Income – An Empirical Investigation. *Department of Economics and Finance Research Papers*. London: Brunel University.
- De Young, R. & K. Roland. (2001). Product Mix and Earnings Volatility at Commercial Banks: Evidence from a Degree of Total Leverage Model. *Journal of Financial Intermediation*, 10, 54–84.
- De Young, R. & Rice, T. (2004). Non-interest Income and Financial Performance at U.S. Commercial Banks. *Financial Review*, 39, 101–127.
- De Young, R. & W. Hunter, C. (2003). Deregulation, the Internet, and the Competitive Viability of Large Banks and Community Banks. In B. Guped. *The Future of Banking*. Westport, CT.
- De Young, R., W. C. Hunter, & Udell G. F. (2004). Whither the Community Bank? What We Know and What We Suspect. *Journal of Financial Services Research*, 25, 81–84.
- Dell, A., Deniz, G., I. & Laeven, L. A. (2008). Credit booms and lending standards: evidence from the subprime mortgage market. *Working Paper*, International Monetary Fund.
- Fender, I. & Gibson, M.S. (2001). Stress testing in practice: A survey of 43 major financial institutions, *BIS Quarterly Review*, June, 58-62.

- Finnerty, J.D. (1992). An overview of corporate securities innovation, *Journal of Applied Corporate Finance*, 4(4):23-39
- Frame, W. & White, L. J. (2004). Empirical studies of financial innovation: lots talk, little action? *Journal of Economic Literature*, 42, 116-144
- Frame, W., & White L. (2004). Empirical Studies of Financial Innovation: Mostly Talk and Not Much Action? *Journal of Economic Literature*, 42, 116-144.
- Furst, T., Karen, W., William, L., & Daniel, N. (2000). Internet Banking, *Journal of Financial Economics*, 79, 223-255.
- Gennaioli, N., Andrei, S. & Robert V. (2012). Neglected risks, financial innovation, and financial fragility. *Journal of Financial Economics*, 104, 452-468.
- Gitonga, T. (2003) Innovation process and the perceived role of the CEO in the banking Industry, Unpublished MBA project University of Nairobi.
- Henderson, B. J. & Pearson, N. D., (2011). The dark side of financial innovation: a case study of the pricing of a retail financial product. *Journal of Financial Economics*.
- Houston, C., Joel, N., Chen, L. & Yue, M., (2011). Regulatory arbitrage and international bank flows. *Journal of Finance*. pp.103-143.
- Kamotho, A. D (2008), Mobile Phone Banking: usage experiences in Kenya
- Kane, E. J. (1986) *Technology and the regulation of financial markets*, in *Technology and the regulation of financial markets: Securities, futures and Banking*. A. Saunders and L.J. White, eds. Lexington Books: Lexington, MA
- Keys, B.J., Mukherjee, T., Seru, A, & Vig, V., (2010). Did securitization lead to lax screening? Evidence from subprime loans. *Quarterly Journal of Economics*.
- Kihumba, J. (2008) Determinants of Financial Innovation and its effects on banks performance in Kenya. *Unpublished MBA project University of Nairobi*.
- Koech, D. (2009). The role of E-Banking on general service delivery and customer satisfaction, Unpublished MBA project JKUAT.
- Kupiec, P.H. (2000). Stress tests and risk capital, *Journal of Risk*, 2(4),27-39
- Laeven, L., Ross L., & Stelios, M. (2011), Financial innovation and endogenous growth.
- Lown, C. S., C. L. Osler, Strahan, P. E. & Sufi, A. (2000). The Changing Landscape of the Financial Service Industry: What Lies Ahead? *Economic Policy Review*, 39–54. Federal Reserve Bank of New York.

- Mabrouk, A. & Mamoghli, C. (2010). Dynamic of Financial Innovation and Performance of Banking Firms: Context of an Emerging Banking Industry. *International Research Journal of Finance and Economics*, 51, 17.
- McConnell, J.J. & E. S. Schwartz (1992), The origin of LYONS: A case study in financial innovation, *Journal of Applied Corporate Finance* 4(4):40-47.
- Merton, R. C. (1990), The Financial Systems and Economic Performance. *Journal of Financial Services Research*, 121-29.
- Lyons, R. K, & Chatman, J. A (2007). Innovation in financial services: Corporate culture and investment banking. *California Management Review*, 50(1), 174–191.
- Mwangi, M. K. (2007), Factors influencing financial innovation in Kenya's securities market: *Unpublished MBA project*, University of Nairobi.
- Niehans, J. (2003). Financial Innovation. *Multinational Banking and Monetary Policy*, *Journal of Banking and Finance*, 7(4), 537-551.
- Obay, L. (2000), *Financial Innovation in the Banking Industry: The Case of Asset Securitization*, Garland Publishing, New York
- Oloo, G. (2004), Banking Survey; A Comprehensive survey of Kenya's banking sector: *The Business and Financial Journal*, MI ISS No (1029-2195).
- Pearce, J. & Robison, R. (1997), *Strategic Management: Strategy formulation, implementation and control*. Irwin, 6th edition Johnson and Scholes.
- Rogers, K. and J. Sinkey. (1999). An Analysis of Nontraditional Activities at US Commercial Banks. *Review of Financial Economics*, 8, 1, 25–39.
- Silber, W. (1975), *Financial Innovation*, Lexington Books, Lexington MA
- Silber, W. (1983), The process of Financial Innovation *America Economic Review Papers and Proceedings*, 73, 89-95
- Silber, W.(1975), *Towards a theory of Financial Innovation* .In *Financial Innovation*, Edited by William L Silber, Lexington mass DC Health.
- Smith, C., Smithson, C. & Wilford, F. (1990), *Managing Financial Risk* ,Harper Business, New York
- Smith, R., Staikouras, C,& Wood, G. (2003). Non-interest Income and Total Income Stability. *Working Paper no. 198*, Bank of England.
- Sørensen, D. and Hans, E. (2012), *Business Development: A market-oriented perspective*. John Wiley & Sons.

- Stiroh, K. J. (2004). Diversification in Banking: Is Noninterest Income the Answer?" *Journal of Money, Credit and Banking*, 26, n5, 854–882.
- Sullivan, H. and Richard, J. (2000), How Has the Adoption of Internet Banking Affected Performance and Risk in Banks? *Financial Industry Perspectives, Federal Reserve Bank of Kansas City*, 1-16.
- Thompson,A. & Strickland,A.J. (1996) *Strategic Management: Concepts and cases* Richard D Irwin,USA.
- Tufano, P. (2003). Chapter 6 Financial innovation. *The Handbook of the Economics of Finance*. 1, 1. 307-335
- Wagner, W. (2007): Financial development and the opacity of banks, *Economics Letters* 97, 6-10.

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 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 Limited
21. Fidelity Commercial Bank Ltd
22. Fina Bank Ltd
23. First community Bank Limited
24. Giro Commercial Bank Ltd.
25. Guardian Bank Ltd
26. Gulf African Bank Limited
27. Habib Bank A.G Zurich
28. Habib Bank Ltd.

29. Imperial Bank Ltd
30. I & M Bank Ltd
31. Jamii Bora Bank Limited.
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 Limited
43. Victoria Commercial Bank Ltd

Source: Central Bank of Kenya (CBK), 2013