

**THE RELATIONSHIP BETWEEN FINANCIAL INNOVATION AND FINANCIAL
PERFORMANCE OF COMMERCIAL BANKS IN KENYA**

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DECLARATION

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

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DEDICATION

This project is dedicated to the following: First, parents, secondly, brothers and sisters last but not least, to my wife Eddah for their love, support, patience, encouragement, will and determination they gave me to complete my postgraduate studies.

ABSTRACT

The purpose of the study was to establish the relationship between financial innovations and financial performance of commercial banks in Kenya. The research design used was descriptive survey. The population of study consisted of all the 45 licensed commercial banks that were dully registered with Central Bank of Kenya. The data collection instrument used was the questionnaire which was administered by the researcher through drop and pick method. Responses were grouped into various categories for analysis using descriptive statistics. Statistical Package for Social Sciences (SPSS version 17) was used to analyze the structured questions while the use of descriptive statistics determined frequencies and percentages. The results were presented in prose, tables, bar graphs and charts.

The study found out that financial innovations improved their operations, improved the liquidity and the asset quality in commercial banks in Kenya. This not only increased their markets but also helped the organizations to remain competitive in the market. Adoption of innovativeness improved firm performance; this is the reason why commercial banks in Kenya are vesting their resources in financial innovations. Financial innovations also deepen liquidity of banks in existing markets, for example by reducing excessive reliance on a narrow base of depositors for funding and improves on earnings, asset quality and this increased efficiency in the operations as a whole and especially in commercial banks in emerging markets and developing countries such as Kenya.

By way of recommendation, the researcher indicates that there is need to adopt financial innovations in order to improve banks performance. In product innovation, the banks should introduce products that are relatively simple and standard and that offer clear value-added. Adoption of financial innovations also enables us to make real economy more efficient through making financial services more available and reducing their prices Allotting large sums of capital to financial innovation 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.

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ACRONYMS

CAMEL-Capital Adequacy

Asset Quality

Management

Earnings

Liquidity

ROA- Return on Assets

CBK- Central Bank Of Kenya

MFCs- Mortgage Finance Companies

ATMs-Automated Teller Machines

IDT-Innovation Diffusion Theory

ROI-Return on investment

BHCs-Bank Holding Companies

ICT-Information Communication and Telecommunication

CEOs-Chief Executive Officers

CHAPTER ONE: INTRODUCTION

1.1 Back ground of the study

Innovation is an application of knowledge to produce new knowledge (Drucker, 1993). There is no shortage of literature that illustrates the importance of knowledge, innovation, and creativity for superior firm performance. Their importance for the survival and success of organizations is widely accepted among organizational researchers (Damanpour, 1996) and has resulted in a proliferation of studies and theories on innovation. Most organizational innovation researchers, however, have agreed that understanding innovative behavior in organizations has remained relatively undeveloped, inconclusive, and inconsistent (Gopalakrishnan and Damanpour, 1997). A reason for inconclusive and inconsistent findings was the different definitions of innovation or innovativeness across disciplines. However, irrespective of these differences, innovativeness is universally perceived as exploring something new that has not existed before.

According to (March, 1991), although innovativeness and quality may intuitively appear to impact positively on a firm's performance including growth, profitability, and market value in a similar fashion, pursuing these strategies may involve some hard choices in allocating resources. The controversy regarding an emerging Internet business model over the past several years was very much framed by a debate over an optimal way to plan and execute strategies (Wernerfelt, 1984).

History shows that financial innovation has been a critical and persistent part of the economic landscape over the past few centuries. In the years since Miller's 1986 piece, financial markets have continued to produce a multitude of new products, including many new forms of derivatives, alternative risk transfer products, exchange traded funds, and variants of tax-deductible equity. A longer view suggests that financial innovation—like innovation elsewhere in business—is an ongoing process whereby private parties experiment to try to differentiate their products and services, responding to both sudden and gradual changes in the economy (Obay, 2000). Financial innovation refers to the process of creation and diffusion of a new financial product, service and functional technique whenever such technique is required. Tufano (2003) broadly defines financial innovation as the act of “creating and then popularizing new financial instruments as well as new financial technologies, institutions, and markets.” He

concludes that much financial innovation is cumulative and most innovations are adaptations or improvements upon previous products or processes.

In a perfect and efficient economic environment without information asymmetry, Financial Innovation would be of no value and would simply represent neutral changes. The various market imperfections lead to Financial Innovation growth and force economic organizations to discover and develop effective innovative functional processes in order to meet the market requirements. The main question is how the use of Financial Innovation in various functional processes resolves numerous problems and insures risk minimization and effectiveness. Thus Financial Innovation represents the answer to economic changes, and, in turn, the need for Financial Innovation represents these changes. Financial Innovation can make financial life easier in the areas of capital movement and accumulation, risk management and derivation of conclusions for decision making, facilitation of transactions and services via a payment system, moral hazard management and management of problems related to the information asymmetry, the growing globalization, economic instability and technology shocks (Merton, 1992).

According to Tufano (2005) some innovations decrease risk and volatility associated with globalizing markets. With greater globalization, firms, investors and governments are exposed to new risks such as exchange rate, interest rate and political risks which innovations seek to manage. The Inter American Development Bank created a currency convertibility and transferability guarantee to address increased exchange rate and political risk. Other examples include “foreign exchange futures, swaps, and options. Interest-rate futures, swaps, options and forwards; and commodity swaps, futures, and options.”

The operation of a financial system involves real resource costs, such as labor, materials, and capital employed by financial intermediaries (e.g., banks, insurance companies, etc.) and by financial facilitators (e.g., stock brokers, market makers, financial advisors, etc.). Further, since multiple time periods are an inherent characteristic of finance, there are also uncertainties about future states of the world that generate risks. For risk-averse individuals, these risks represent costs. The possibility of new financial products/services/instruments that can better satisfy financial system participants' demands is always present. Viewed in this context, a financial

innovation represents something new that reduces costs, reduces risks, or provides an improved product/service/instrument that better satisfies participants' demands (Boot and Thakor, 1997).

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 that is used by financial services firms, then it may become part of a new financial production process (DeYoung, 2001a).

Financial innovation, like other economic behaviors, generally arises in anticipation of material gains following a cost-benefit analysis. The innovation makes possible either a reduction in costs or an increase in revenues, or both. On the cost-reducing side, in particular, exogenous technological change provides room for cost reduction (DeYoung, 2001b). For example, advances in information technology have significantly lowered the cost of accounting-intensive products such as mutual funds. Other product innovations relying on speedy calculation and action, such as portfolio insurance and index arbitrage transaction, have similarly been made feasible by upgrade in computer speed. The ATMs, which reduce banks' operating costs by efficiently executing much of a teller's duty over the retail counter, is one of the renowned innovations that benefit from technological advances (Diederer, et al, 2005).

Generally speaking, all profit-seeking enterprises including banks are constantly seeking new and improved products, processes, and organizational structures that can reduce their costs of production, better satisfy their customers' needs, and yield higher profits. Bank customers demand for variety, convenience and new services. They want products that can meet their precise, individual needs. Technology boom in the past decades have helped banks to respond to this challenge (Fields and Donald, 1999).

1.1.1 Financial Performance and financial institutions

Financial soundness is a situation where depositor's funds are safe in a stable banking system. The financial soundness of a financial institution may be strong or unsatisfactory varying from one bank to another (BOU, 2002). External factors such as deregulation; lack of information among bank customers; homogeneity of the bank business, connections among banks do cause bank failure. Some useful measures of financial performance which is the alternative term as financial soundness are coined into what is referred to as CAMEL. The acronym "CAMEL" refers to the five components of a bank's condition that are assessed: Capital adequacy, Asset quality, Management, Earnings, and Liquidity. A sixth component, a bank's Sensitivity to market risk, was added in 1997; hence the acronym was changed to CAMELS. (Note that the bulk of the academic literature is based on pre -1997 data and is thus based on CAMEL ratings.) Ratings are assigned for each component in addition to the overall rating of a bank's financial condition (Jose, 1999). The ratings are assigned on a scale from 1 to 5.

Capital Adequacy: This ultimately determines how well financial institutions can cope with shocks to their balance sheets. The bank monitors the adequacy of its capital using ratios established by The Bank for International Settlements. Capital adequacy in commercial banks is measured in relation to the relative risk weights assigned to the different category of assets held both on and off the balance sheet items (Bank of Uganda, 2002).

Asset Quality: The solvency of financial institutions typically is at risk when their assets become impaired, so it is important to monitor indicators of the quality of their assets in terms of overexposure to specific risks trends in non- performing loans, and the health and profitability of bank borrowers especially the corporate sector. Credit risk is inherent in lending, which is the major banking business. It arises when a borrower defaults on the loan repayment agreement. A financial institution whose borrowers default on their repayments may face cash flow problems, which eventually affect its liquidity position. Ultimately, this negatively impacts on the profitability and capital through extra specific provisions for bad debts (Bank of Uganda, 2002).

Earnings: The continued viability of a bank depends on its ability to earn an adequate return on its assets and capital. Good earnings performance enables a bank to fund its expansion, remain

competitive in the market and replenish and /or increase its capital (Bank of Uganda, 2002). A number of authors have agreed that, banks that must survive need: Higher Return on Assets (ROA)., better return on net worth/Equity (ROE), sound capital base i.e. the Capital Adequacy Ratio (CAR), adoption of corporate governance ensuring transparency to stakeholders that is equity holders, regulators and the public.

Liquidity: Initially solvent financial institutions may be driven toward closure by poor management of short-term liquidity. Indicators should cover funding sources and capture large maturity mismatches. An unmatched position potentially enhances profitability but also increases the risk of losses (Bank of Uganda, 2002).

Generally, literature on corporate governance comprises attributes such as financial transparency, disclosure and trust among others and it is revealed that financial transparency and disclosure enhance trust between the stakeholders and organizations like commercial banks. Capital Adequacy, Earnings and Liquidity are the key dimensions of measuring financial performance in Commercial Banks.

1.1.2 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. As at 31st December 2009 the banking sector comprised 45 institutions, 43 of which were commercial banks and 2 mortgage finance companies,. Commercial banks and mortgage finance companies are licensed and regulated under the Banking Act, Cap 488 and Prudential Regulations issued there under. Foreign Exchange Bureaus are licensed and regulated under the Central Bank of Kenya (CBK) Act, Cap 491 .Out of the 45 commercial bank institutions, 33 were locally owned and 12 were foreign owned. The locally owned financial institutions comprised 3 banks with significant government shareholding, 28 privately owned commercial banks and 2 mortgage finance companies (MFCs). Of the 42 private banking institutions in the sector, 71% are locally owned and the remaining 29% are foreign owned. Performance of the banking sector was rated strong as institutions achieved satisfactory financial conditions and improved operations results despite high market competition as each of these institutions scramble for a significant market share. New products have been introduced in the market as a

result of rising competition. The system remained well capitalized. Shareholders' funds, deposits and assets increased by 35.2 percent, 27.7 percent and 31.9, respectively (CBK, 2009).

1.2 Statement of the Problem

The rising importance of the financial sector in modern economies, as well as the rapid rate of innovation in that sector, has generated a research interest in financial innovation. Indeed, a broad descriptive literature that discusses recent financial innovations and that advances various hypotheses about them has arisen (Lea 1996). Furst, et al. (2000) studied on Internet banking using logit models; Sullivan (2000) compares banks in the USA that had transactional Internet web-sites to those that did not have such web-sites and Laderman (1990) examines the use of automatic teller machines (ATMs).

The financial services market in Kenya has been subject to radical transformation since Kenya started to register economic growth early 2003. Banks in Kenya started to compete for Kenyan hugely untapped unbanked population. The distribution of retail financial services received growing attention in the academic and professional literature as it has been hailed as an increasingly important factor in determining whether a company competes effectively in its chosen markets (Chandler et al., 1962).

Locally, some research studies have been conducted on financial innovation, Kamocho (2008) study on mobile phone banking usage experience observed that competition triggers innovation and creativity. Continuous innovation not only yield new products but rather promotes efficiently in the performance of activities. Mwangi (2007) carried out a study on Factors Influencing Financial Innovation of Companies listed at Nairobi Stock Exchange. Mwangi (2007) Concluded that Kenyan laws protecting investors was the major factor influencing financial innovation. Mwangi (2007) 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.

No known study has been put forward to look at the relationship between financial innovation and financial performance in Kenya. This creates an academic gap that this study seeks to fill by investigating the relationship between financial innovation and financial performance of commercial banks in Kenya.

1.3 Main Objective

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

1.3.2 Specific Objective.

To establish the relationship between financial innovation and financial performance of commercial banks in Kenya.

1.4 Significance of the Study

The Banking Industry

The findings of the survey will be used by stakeholders in the banking industry to make appropriate decisions towards adoption of financial innovation. They will understand the benefits of adopting innovations in their financial institutions.

The Academicians and Scholars

Future researchers and scholars may use the survey as a source of reference for further research on the same area. Financial /service sector innovations and inventions depend on the surveys carried out in such areas. It is important to document the research findings for future reference. Scholars will be keen to understand relationship between financial innovations and banks' performance.

The Government

The government will be interested in finding out how financial innovations can be maximized in spurring economic growth in financial institutions.

Finally the study is meant to help in bridging the gap that currently exist between the financial innovations and financial performance of the firms that take up innovations.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter reviews the relevant literature to the study. This chapter is divided into smaller sections which include; Theoretical issues and empirical reviews.

2.1 Theoretical Review

2.1.1 Innovation Diffusion Theory

Rogers [1983] explained the process of innovation diffusion as one which is dictated by uncertainty reduction behaviour amongst potential adopters during the introduction of technological innovations. Even though innovations typically offer its adopters novel ways of tackling day-to-day problems, the uncertainty as to whether the new ways will be superior to existing ones presents a considerable obstacle to the adoption process. To counter this uncertainty, potential adopters are motivated to seek additional information, particularly from their workplace peers [Brancheau & Wetherbe, 1990].

Innovation Diffusion Theory (IDT) consists of six major components: innovation characteristics, individual user characteristics, adopter distribution over time, diffusion networks, innovativeness and adopter categories, and the individual adoption process [Taylor & Todd, 1995(b)].

Arguably the most popular of the six components of IDT centres on the characteristics of the innovation itself. After analysing a variety of previous innovation diffusion studies, Rogers [1983] singled out the following five characteristics of innovations that consistently influence the adoption of new technologies:

First, Relative advantage that is the degree to which an innovation is perceived to be an enhancement of the current offerings. Second, Compatibility that refers to the extent to which an innovation is perceived to fit together with potential adopters' habits and practices. Third, Complexity that refers to the degree to which an innovation is perceived as being complicated to use. Fourth, Observability that is the degree to which the results of an innovation are observable to others. Fifth, Trialability that refers to the degree to which an innovation may be sufficiently tested prior to adoption.

In the domain of information systems, Moore & Benbasat [1991] built on the work of Rogers, amongst others, and expanded the array of innovation characteristics to seven. Three of the seven innovation characteristics are directly borrowed from Rogers: *relative advantage*, *compatibility*, and *trialability*. The fourth characteristic, *ease of use*, is a close relative to Rogers' *complexity*. It is worth noting that both *relative advantage* and *ease of use* are subjective characteristics since they can be viewed differently depending on an individual's perceptions.

Moore & Benbasat [1991] also derived three further characteristics. While Rogers [1983] included *image* as an internal component of *relative advantage*, Moore & Benbasat found it to be an independent predictor of adoption. Image is the self-perception that adopting an innovation could result in enhanced social status for an individual amongst his / her peers [Agarwal & Prasad, 1997]. The final pair of characteristics, *results demonstrability* and *visibility*, are derived from Rogers' *observability* characteristic. *Result demonstrability* is defined as the tangibility of the results of adopting an innovation, and *visibility* as the degree to which prospective users see an innovation as being visible in the adoption context [Moore & Benbasat, 1991; Agarwal & Prasad, 1997].

Moore & Benbasat [1991:196] reminds us, however, that these definitions are, in fact, "based on perceptions of the innovation itself, and not on the perceptions of actually using the system". As Fishbein & Ajzen [1975] concur, attitudes towards an object and attitudes regarding a particular behavior relating to that object can frequently differ.

2.1.2 Silber's theory of financial burden

Silber's (1975) basic hypothesis, emphasising the microeconomic framework of financial innovation. It could be summarised in the phrase that firms face some financial constraints and try to remove or lessen their burden. Silber uses the word firm for financial institutions. These constraints could be self-imposed, market -imposed or government imposed. He believes that the 'raison d'etre' of every firm is to maximise its utility taking into account existing constraints. He expressed an institution's behaviour as a simple linear programming model of optimization where firms maximise utility subject to a number of internal and external constraints (Silber, 1975). Self-imposed constraints usually are the firm's liquidity (competitive or oligopoly, perfect or imperfect capital markets) in which they participate.

Silber defines the particular conditions that will enable the emergence of a financial innovation (dividing them into instruments and practices), such as the arrival or imposition of an exogenous constraint. He discerns two kinds of constraint: a possible reduction of firm's utility, hence a new tool is required to bring it back to its previous level of utility 'abnormally' high ('success innovation,') (Silber, 1975). He considers as the main historical causes of innovation by US banks as a response to a reduction of their utility or adversity innovation: the interest rate ceiling, where banks tried to endogenize exogenous items of their balance sheet (Certificate of Deposit, Eurodollars and bank-related commercial paper); the decline in the markets for particular assets (introduction of long term loans from commercial banks during the 1930s); a declining growth rate of sources of funds (new products in order to attract new funds) and an increase of the risk of a particular asset or of all assets due to the economic environment (interest). On the other hand, examples of 'success innovations' are the extensive use of cost-reducing information technology and elaborate new finance theories in the financial sector and several new products designed to cope with the rising yield of assets in order to attract new funds, summarising Silber's contribution in comparison with other contributions). He proposes that the three possible ways a financial firm could innovate are: by endogenizing an exogenous item of the balance sheet, introducing an existing financial instrument from another country or industry into the firm's portfolio and thirdly as the mixture of the above two ways, taking the form of a modification of an existing instrument (Silber, 1975).

Silber (1983) provides us with four different types of financial innovation. Initially he repeats his microeconomic theory and approaches the welfare impact of financial innovation. Then he presents a survey of financial innovations that took place from 1970 contracts, market structures and institutional organisation. During his classification, he uses his already mentioned constraints as the main exogenous reason(s) that had initiated these financial innovations.

He concludes that his model could explain around 60% of all innovations that took place during the period. He highlights the leading role of technology and legislation in the initiation process of innovations. He finally concludes that these two main constraints have led to increased economic

benefits via a reduction of costs, a better allocation of risk, and circumvention of outdated regulation. The result has been an increase in the economic welfare of the system (Silber, 1983).

2.1.3 Kane's theory of regulatory dialectic

A different perspective is expressed by Kane (1981) who argues that the most prominent and significant factor which initiates the financial innovation process is regulation. Kane (1997) had already introduced the concept of regulatory dialectic. This concept describes the cyclical relationship between regulation and firms. He conceives the political process of regulation and the economics of regulatee avoidance as opposite forces where both try to maximise their utility subject to the constraints imposed by the other party. It is a typical Hegelian endless interaction of regulation, regulatory avoidance or alternatively called 'loophole mining' and re-regulation.

He uses his model to explain most of the evolution that took place in the US during the 1960s and 1970s. The main force is the regulative dialectic between the federal banking regulation and the exogenous market forces such as technological change, changing banking environment and increasing uncertainty about future financial developments. He approaches innovation as an arbitrage instrument trying to take advantage of regulation lags. Innovation takes the form of product substitution in order to circumvent regulation sometimes by just rearranging contracts and by just simply moving along different financial systems (Kane, 1997).

He defines regulation's burden as a form of taxation imposed on banks. Banks' main concern during the 1970s was to avoid it. In order to attract customers despite the regulative burden, they used a mixture of means initially covering non-monetary benefits to indirect monetary benefits and at the end mainly monetary advantages. But on the other hand regulators developed their own defences and adopted new approaches resulting in the emergence, in the late 1970's and early 1980's, of a re-regulative action (Kane, 1997).

Kane (1988a) analysed his theory in more depth, where he explained in details his association and acceptance of the Hegelian concept of thesis (regulation), antithesis (loophole mining), synthesis (re-regulation), using examples from the US banking environment of the period 1960-1985. A final point is that the final synthesis is going to be a new thesis and the process could go on

infinitely. Kane's contribution is essential for the better understanding of the existence of dialectic between financial institutions and exogenous factors.

2.2 Empirical Studies

A key feature in the process of growth of global financial markets has been a steep increase in complexity brought about, among other things, by the many innovative mechanisms and instruments that have repeatedly blurred the boundaries between financial sectors. Innovative financial products and practices have more often than not generated new linkages among financial agents in different financial sectors. For example, the past 12 years have witnessed a steady growth in cross-sectoral risk transfer between banks, reinsurance and capital markets (Cummins, 2008). Novel, and more complex, inter-relations have a wide variety of consequences. On the one hand, for example, they may enable and promote efficiency in the allocation of resources. On the other hand, new connections often bind agents with competing interests, with differing degrees of access to information as well as dissimilar levels of understanding of this information. More often than not, cross-sectoral risk transfer is brought about by transactions involving sophisticated counterparties, which have historically benefited from less demanding degrees of regulatory and supervisory scrutiny. Further, as financial innovation habitually relies on speed of operation in order to seize a competitive opportunity; decision-making processes appear under additional pressures. In this landscape, effective identification and management of potential conflicts of interest by financial regulators and supervisors becomes a critical issue.

The study of innovation in the financial service industry is a relatively new area of business research. An analysis of the extant literature on financial service innovation reveals several research topics. One set of studies has concentrated on the definition of success for new financial services. Some of these studies have incorporated the traditional paradigms of new product success within a services setting and have explored the differences between new product development and new service development (Cooper, Ian, 1986), have proposed multiple success measures for evaluating new financial service performance: financial measures being profit-based, sales-based, or relating to cost performance and non-financial measures such as competitive performance of the new financial service, and boosting sales and market share of other services.

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.

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 W.S and White L.J. (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.

A study conducted by Kamotho (2009) on 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. Hence lowering the transaction cost. This finding is corroborates that of Tufano (1989). 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.

Furst, Lang, and 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.

Frame, Srinivasan, and Woosley (2001) found that the probability of adopting this process innovation was negatively related to the number of subsidiary banks, but positively related to the number of bank branches. This suggests a link between organizational structure and the adoption of certain technologies. Mantel and McHugh (2001) both use a consumer survey of 1,300 people to study usage of electronic bill payment and debit cards. In the former study, the usage of electronic bill payment services is found to be positively related to age, income, and gender (female). The latter study finds that debit card usage is related to age, income, and market size (population).

2.2.1 Financial Innovation and Financial performance

Although innovation has been a critical part of the financial landscape over the past few centuries, its determinants remain poorly understood. In a review article, Frame and White (2004) identify 39 related empirical studies but most focus on the "back end" of innovation processes, looking at issues such as the way they are diffused, the characteristics of firms that adopt them, consequences for firm performance and social welfare. Studies of the consequences of financial innovation represent the largest number of empirical studies. Garbade and Silber (1978) examine the effects of a major input innovation for finance: the establishment of the telegraph in the nineteenth century.

Little research has examined how financial innovations and firm performance are related. Although researchers have an interest in their underlying relationship, they usually find it difficult to collect soft data such as innovativeness and performance across a few hundred companies. Thus, it is rare to find large-scale studies that investigate their relationship, not to mention a mediation effect of innovativeness and quality. However, there are some indirect evidence which imply the mediation effect of quality on the relationship between innovativeness and firm performance (Kleinschmidt, 1996). In the Sears' Employee–Customer–Profit (ECP) chain model, there is a chain of cause and effect running from employees' innovative behavior to an improvement in customer satisfaction, then to superior firm performance (Rucci, Kirn, and Quinn, 1998).

2.2.2 Financial innovation in banking services development

The branch network has traditionally been the main distribution channel for retail banking services. This is a function of the fact that it was the most convenient way of processing the myriad transactions which resulted from a largely cash- and cheque-based society. Also, the financial service of retail banking is a typical service offering and as such displays the distinguishing characteristics of services as documented comprehensively in the literature (Bateson, 1977; Shostack, 1982). The branch network helps overcome intangibility problems by providing tangible evidence of the organization as well as being a convenient location for the customer to visit and become involved in the service production process. It has also provided the ideal platform for relationships to be formed with customers, helping further to engender trust and confidence. However, the branch networks of the main clearing banks have evolved in a largely unplanned manner for a number of reasons. First, the current structure of the retail banking industry has been determined by a number of mergers between organizations, often with a degree of communality in branch coverage. With cost pressures less intense in the past, branches were often retained but more recently rationalization of branch networks to reduce costs is emerging. Second, in a period of minimal competition, decisions regarding branch location and feasibility were often driven by organizational rather market needs (Devlin, 1995).

The need to control costs for better financial operation of the banks has also been a motivating factor behind the final main development which has been the closure of some branches deemed no longer viable and the downgrading of others to satellite status. Under such a system certain large branches are designated “core branches” and are then made responsible for operating a number of related smaller branches known as satellites. Such smaller branches provide a limited range of services and are heavily dependent on technology such as Automated Teller Machines (ATMs). This practice has been christened “hub and spoking” (Howcroft, 1993). The hub branch usually provides managerial and some administrative back up to its spokes or satellites. The exact amount of centralization varies between banks, but the basic motivations remain the same, to save on costs. These financial innovations are achieved by taking advantage of the economies of scope and scale associated with partially centralized operations. Staff costs can also be reduced as less specialized management and more junior personnel can be employed in the satellite branches.

2.2.3 Financial Innovation and profitability.

Most studies examining innovativeness or performance (e.g., Buzzell and Gale, 1987): have used profitability or growth as overall performance measures, without differentiating their relationship. A wide variety of researchers in strategy literature have used growth as either a sole measure of firm performance or in combination with profitability. For example, Varaiya, Kerin, and Weeks (1987) reported that profitability and growth influenced shareholder value, without differentiating profitability from growth. Woo, Willard, and Daellenbach (1992) studied sales growth, ROA, and market-to-book ratios, respectively, but did not investigate their relationship. Considering the importance of understanding the impact of trade-offs between growth and profitability, we examine how the capital market rewards growth and profitability, speculating that growth drives both profitability and market value.

The sole financial organizational innovation that has been empirically studied has been bank holding companies' (BHCs) formation of Section 20 subsidiaries to underwrite securities in the late 1980s and the 1990s. Bhargava and Fraser (1998), using event studies, found that BHCs experienced abnormal positive returns from the initial Federal Reserve decisions to permit banks

to form and expand these subsidiaries, but negative abnormal returns from subsequent decisions to permit BHCs to expand their corporate underwriting. Fields and Fraser (1999) find that the pay performance sensitivity of the CEOs of BHCs that enter securities underwriting increases during their transition into underwriting but remains substantially less than the sensitivity found in investment banks.

The characteristics of Internet-only start-up (de novo) banks in the late 1990s has received attention from DeYoung (2001a, 2001b). He found that, as compared with conventional de novo banks, the Internet de novos are less profitable, due to low business volumes and high non-interest expenditures; he also found that the Internet de novos' profitability ratios and non-interest expense ratios improve more quickly over time than those of conventional de novos, offering some hope that the Internet-only format may eventually be viable.

2.3 Conclusion

This chapter has surveyed and summarized the existing theoretical issues and empirical literature on financial innovation. Along the way it has stressed the surprising fewness of research papers that empirically test the relationship between financial innovation and financial performance. Although it has also offered some conjectures as to why that fewness might not be so surprising after all. According to Van Horne (1985, p. 621), "One of the bedrocks of our financial system is financial innovation, the life blood of efficient and responsive capital markets," then more extensive empirical research on financial innovation would surely yield important and interesting insights about that bedrock. There is extensive room for improvements in our society's understanding of how innovations arise, how their characteristics compare with those of their predecessors, why they succeed or fail, how fast the successful innovations diffuse and why, who uses them and the relationship between financial innovation and financial performance among commercial banks.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

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

3.2 Research design

In this study a descriptive survey was used. Descriptive research portrays an accurate profile of persons, events, or situations (Robson, 2002). Surveys allow 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 (Saunders et al., 2007). Therefore, the descriptive survey was deemed the best strategy to fulfill the objectives of this study. Robson (2002) points out that descriptive study portrays an accurate profile of persons, events or situation. Furthermore, Chandran (2004) states 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 (Robinson 2002, Chandran 2004).

3.3 Study Population

“A population is an entire group of individuals, events or objects having common characteristics that conform to a given specification.” (Mugenda & Mugenda, 2003: 9). According to Saunders (2003) the population is the full set of cases from which a sample is taken. The population of study consisted of all the 45 licensed commercial banks that were dully registered with Central Bank of Kenya.

3.4 Sample size

A sample size has a specific level of certainty called the level of confidence. The precision of estimate of the population or tolerable level of accuracy for any estimate made from the sample is called the confidence interval or margin of error. According to Kothari (1990), researchers

normally work to a confidence level of 95% and a margin error of between 3% and 5%. The sample size is the part of the target population that was selected by the researcher for the purpose of data collection.

The study adopted a census study approach. According to Donald R. Cooper & Pamela S 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 we draw may not be representative of the population from which it is drawn. Therefore for this case of this study was appropriate for researcher to choose census method to be used because the population was small and the institutions were easily assessable to be reached.

3.5 Data Collection Procedures and Instruments.

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). Primary and secondary data are the types of data collected. Owing to the nature of the study, that is an in depth inquiry, data was collected using a questionnaire with the finance and ICT managers of each bank. The data on financial performance of the commercial banks was collected using questionnaire. These led to better (comprehensive and reliable) results. Finance managers and ICT managers located in the head offices of the banks were interviewed using a questionnaire.

According to Chandran (2003), questionnaire is a series of written questions on a topic about which the respondents' opinions are sought. Questionnaires provide a high degree of data standardization and adoption of generalized information amongst any population. They are useful in a descriptive study where there is need to quickly and easily get information from people in a non-threatening way. Flick (1998) holds that questionnaires are useful in establishing the number of people who hold certain beliefs and hence possible to gauge public opinion on an issue. The responses are gathered in a standardized way, so questionnaires are more objective, certainly more so than interviews. Generally, it is relatively quick to collect information using questionnaires. However in some situations they can take a long time not only to design but also to apply and analyze. Potentially information can be collected from a large portion of a group. This potential is not often realized, as returns from questionnaires are usually low.

The questionnaire was administered by the researcher through drop and pick method.

3.5.1 Validity of research instrument

Validity refers to the appropriateness, meaningfulness and usefulness of inferences a researcher makes based on the data collected. An appropriate inference is one that is relevant to the purpose of the study while a meaningful inference is one that says something about the meaning of the information obtained through the use of the instrument. The results of the assessment should provide useful information about the research questions or variables being measured. The three types of validity are content- related validity, criterion-related validity and construct validity (Mugenda and Mugenda, 1999). A questionnaire is said to be valid when it actually measures what it claims to measure (Borg and Gall 1996). Mugenda and Mugenda (2003) argue that the usual procedure in assessing the content validity of a measure is to use a professional or expert in a particular field. Since the questionnaire was administered to the employees of the banks, the inferences that were made from data collected were valid.

3.5.2 Reliability of research instrument

Reliability is a measure of the degree to which a research instrument yields consistent results or data after repeated trials. Reliability is influenced by random error, which is deviation from a true measurement due to factors that have not effectively been addressed by the researcher. Errors may arise from ambiguous instructions to the respondents (Mugenda and Mugenda, 1999). According to Sharelson (1981) an instrument is reliable when it can measure a variable accurately and consistently and obtain the same results under the same conditions over time. Reliability refers to the consistency of measurement and is frequently assessed using the test–retest reliability method.

3.6 Data Analysis

The whole process which starts immediately after data collection and ends at the point of interpretation and processing data is data analysis (Cooper & Schindler, 2003). Chandran (2004), defines statistics as a discipline that provides the tools of analysis in research and one which refers to facts, information or data and to a system of data collection and analysis. Mugenda (2003) points out it as a process of bringing order, structure and meaning the mass information collected. Therefore, editing, coding, classifying and tabulating were the processing steps used to process the collected data for a better and efficient analysis.

Regression model

Performance (cost reduction or increase in revenue) of the commercial banks is dependent on capital adequacy, asset quality, earning, and liquidation.

$$D = k + \alpha_1 t + \alpha_2 c + \alpha_3 a + \alpha_4 i + e$$

Where:

D, Performance of commercial banks;

t , is capital adequacy;

c , is asset quality,

a , earnings and

i , is Liquidity

K = a constant/the proportion of various elements

e = the error term

The questionnaire responses were grouped into various categories for analysis using descriptive statistics. The Statistical Package for Social Sciences (SPSS) version 17 was used to analyze the structured questions while the use of descriptive statistics determined frequencies and percentages. The results were presented in prose, tabular and graphical form. Data from document review was incorporated in the description.

3.7 Ethical issues

The researcher endeavored to adhere to all ethical standards in the course of the study by protecting sources of information which might have been critical or sensitive so as to cushion respondents from being censored by their superiors. While conducting the research, the researcher tried to avoid research procedures that are likely to cause any psychological or emotional harm such as invention of respondent's/interviewee's right to privacy by posing sensitive questions or by accessing personal records which may contain personal data. The researcher ensured confidentiality of the data obtained. Adherence to cultural values of the respondent's was observed and given due respect during data collection process. The information obtained meant to be used purely for academic discourse and for the benefit of the readers and indeed all stakeholders of the bank.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter entails the findings of the study based on the data collected from the field. The analysis focused on establishing the relationship between financial innovation and financial performance among commercial banks in Kenya. A sample size of 45 commercial banks was used whereby 25 successfully responded and the information is presented in form of pie charts, bar graphs and tables.

4.2 Response rate

This section sought to show the actual number of respondents who responded in the study against the targeted sample size. The findings are shown in table 4.1 below.

Table 4.1 Response rate

Respondents	Frequency	Percentage
Non-respondents	20	44%
Actual response	25	56%
Target population	45	100

The study established that out of the 45 targeted commercial banks (100%) only 25 (56%) managed to respond, however 20(44%) did not respond.

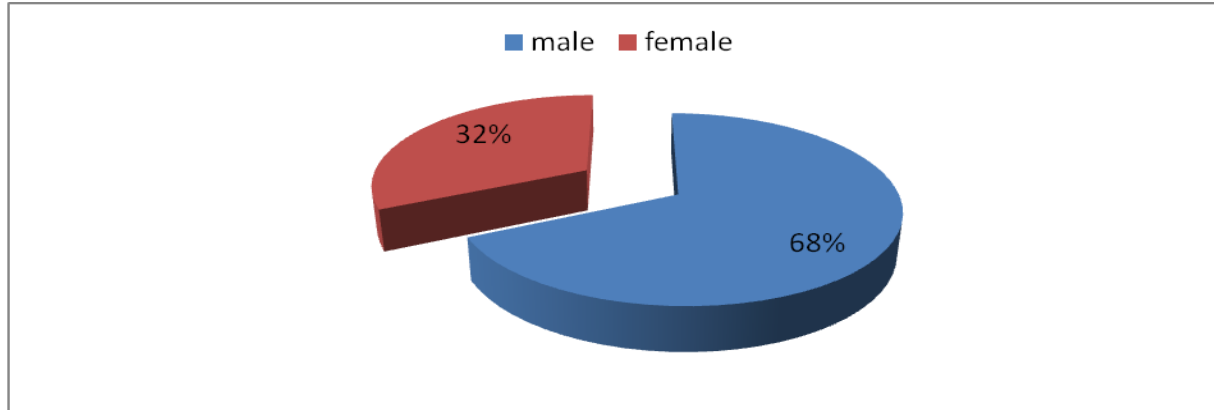
4.3 Demographic information

In order to capture the general information of the respondents, issues such as gender, age group, duration worked at the organization, job designation and level of education were addressed in the first section of the questionnaire. This was important because it enhanced reliability and gave the basic understanding of the respondents.

4.3.1 Gender

The study sought to establish the gender of the respondents and the following figure 4.1 shows the findings.

Figure 4.1 gender

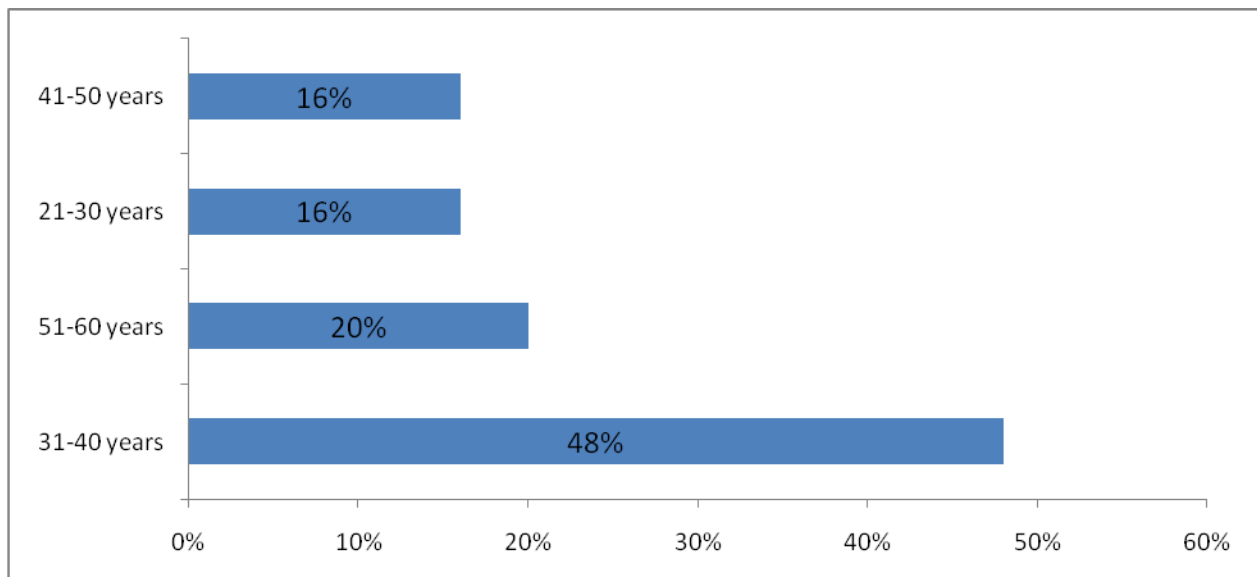


The study established that majority of those who participated in the study were male and they were represented by 68% whereas female were 32% respectively.

4.3.2. Working experience in the banking industry

This section sought to establish the working experience in the banking industry that the respondents belonged to. The following figure 4.2 shows the results of the findings.

Figure 4.2 Working experience in the banking industry

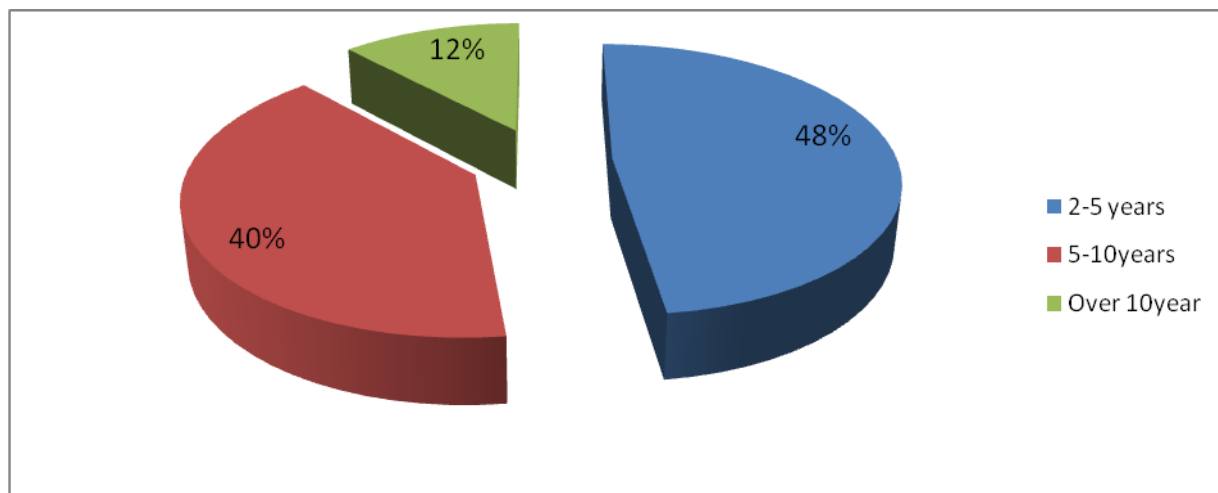


From the study it was established that majority of the respondents had worked in the banking sector between 31-40 years and were represented by 48%, 20% were in the period of 51-60 years whereas 16% represented those between the period of 21-30 and 41-50 years respectively.

4.3.3 Duration worked in the organization

The study sought to establish the period that the respondents who took part in the study had worked in the organization. The following figure 4.3 shows the findings.

Figure 4.3 Period worked in the organization

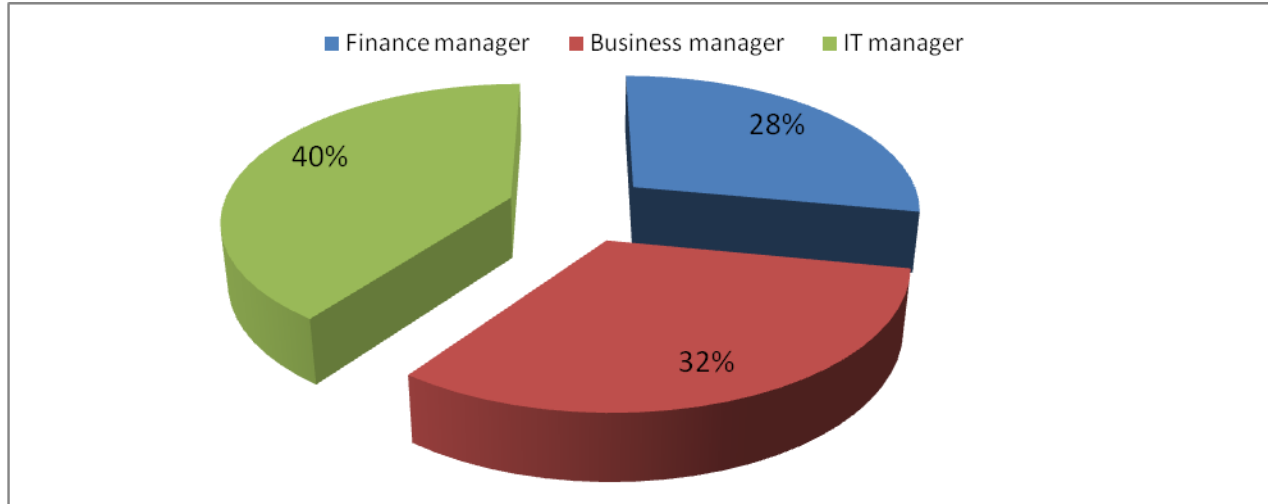


The study found out that 48% of the respondents had worked in the commercial banks for a period of 2-5 years, 40% indicated that they had worked for 5-10 years while 12% said that they had been in the banks for over 10 years.

4.3.4 Job designation

This section of the study sought to establish the positions that the respondents who took part in the study held in the organization. The following figure 4.4 shows the results of the findings.

Figure 4.4 position held in the organization

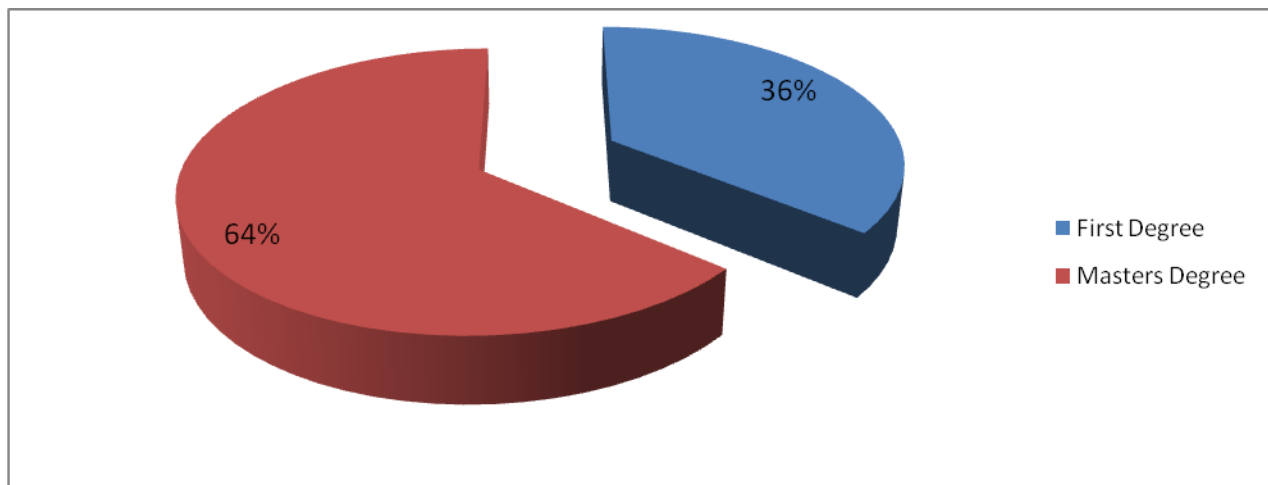


The study indicated that majority of respondents 40% were the IT managers in the commercial; banks, 32% indicated that were the business managers while a further 28% said that they were the finance managers. These respondents were appropriate since they are highly involved in new innovations especially on information and technology, financial systems, products among others.

4.3.5 Level of education

The study sought to establish the highest level of education that the respondents had attained. The following figure 4.5 shows the results of the findings.

Figure 4.5 Level of education



The study established that those respondents who held senior positions/managerial positions had attained their masters' degree and this was represented by 64% while those who had attained their first degree were represented by 36%. This shows that most of the staff and especially in the managerial level are highly qualified.

4.4 Capital adequacy

The study sought to establish how the adoption of financial innovation had improved the capital adequacy of the commercial banks.

4.4.1 Importance of adoption of financial innovation in the improvement of capital adequacy

This section of the study sought to establish the extent to which the respondents agreed on adoption of financial innovation. The following table 4.2 shows the results of the findings.

Table 4.2 Adoption of financial innovation in the improvement of capital adequacy

	Frequency	Percent
Strongly Agree	23	92.0
Agree	2	8.0
Neither agree or disagree	-	-
Disagree	-	-
Strongly disagree	-	-
Total	25	100

Majority of the respondents 92% strongly agreed that adoption of financial innovation was very important in the improvement of capital adequacy of commercial banks, while a further 8% agreed that these financial innovations were essential.

4.4.2 Importance of adoption of financial innovation in the improvement of capital adequacy

The study sought to establish how the respondents rated the importance of adoption of financial innovation in the improvement of the capital adequacy and the following table 4.3 shows the findings.

Table 4.3 Importance of adoption of financial innovation in the improvement of capital adequacy

	Frequency	Percent
Very high	20	80.0
High	5	20.0
Moderate	-	-
Low	-	-
Negligible	-	-
Total	25	100

From the table, the respondents rated the importance of adoption of financial innovation as very high and this was represented by 80% whereas 20% rated adoption as high in the improvement of the capital adequacy in the commercial banks. The high results above shows that banks have realized that in order to improve on capital adequacy and remain competitive on the market they need to adopt new financial innovations which should continue to promote safety and soundness in the financial system and, as such, the new innovations should improve or at least maintain the current overall level of capital in the system.

4.4.3 Extent which the financial innovation has improved the capital adequacy of the bank

This section of the study sought to establish the extent to which the financial innovation had improved the capital adequacy of the bank. The following table 4.4 shows the ratings.

Table 4.4 Extent which the financial innovation has improved the capital adequacy of the bank

	Frequency	Percent
Very great extent	17	68.0
Great extent	8	32.0
Moderate extent	-	-
Low extent	-	-
No extent	-	-
Total	25	100

Majority of the respondents 68% indicated financial innovation had improved the capital adequacy of the bank to a very great extent whereas a further 32% said that the innovations in the bank were to a great extent.

4.4.4. Whether commercial banks are adopting financial innovations to improve their operations

The study sought to establish whether the respondents agreed that the commercial banks were adopting financial innovations to improve their operations. The following table 4.5 shows the findings.

Table 4.5 whether commercial banks are adopting financial innovations to improve their operations

	Frequency	Percent
Strongly agree	19	76.0
Agree	6	24.0
Neither agree or disagree	-	-
Disagree	-	-
Strongly Disagree	-	-
Total	25	100

The study indicated that majority of the respondents strongly agreed that commercial banks were adopting financial innovation to improve their operations while a further 24% agreed that

commercial banks were adopting the innovations to remain competitive in the market. From the results it is evident that financial innovations have become the core of the strategic transformation of operations in commercial banks.

4.4.5 Adoption of the following innovations in carrying out business activities

This section of the study sought to establish how the respondents rated the adoption of the following innovations in carrying out business activities. A scale of 1-5 was used. The scores “Not applicable” and “Less extent” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{Disagree} \leq 2.5$). The scores of ‘Indifferent’ were equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{Moderate extent} \leq 3.5$). The score of “Great extent” and “strongly Very great extent” was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{Agree} \leq 5.0$).

Table 4.6 Adoption of various innovations in carrying out business activities

	Mean	Std. Deviation
Automated teller machine	4.8800	.33166
Telephone banking	4.8800	.33166
Electronic funds transfer	4.8800	.33166
Electronic data interchange	4.8400	.37417
Electronic office banking	4.7600	.43589
Smart cards	4.2800	.45826
MICR	4.1600	.37417
Electronic home banking	4.0800	.49329

The study shows that majority of the respondents indicated that their banks had adopted to a great extent the use automated teller machine, telephone banking and electronic money transfer ; this was represented by a mean score of 4.88 respectively. The respondents also revealed that their banks had adopted electronic home banking and MICR (Magnetic Ink Character Recognition) to a great extent in carrying out business activities; this was represented by a mean score of 4.08 and 4.16 respectively on the continuous likert scale. Moreover it was found out that banks had majorly adopted the smart cards and electronic office banking to a great extent in their operations as shown by a mean score 4.28 and 4.76 respectively. The adverse adoption of the

above innovations can also be linked to the advanced technology that have been adopted by commercial banks in Kenya which include change of baking systems to enhance smooth operations in the banks. It means that the level of innovation improves the performance among commercial banks in Kenya

Table 4.7 Adoption of various innovations in carrying out business activities

	Not applicable		To a less extent		To a moderate extent		To great extent		To a very great extent	
	f	%	f	%	f	%	f	%	f	%
Automated teller machine	-	-	-	-	-	-	3	12.0	22	88.0
Smart cards	-	-	-	-	-	-	18	72.0	7	28.0
Telephone banking	-	-	-	-	-	-	3	12.0	22	88.0
MICR	-	-	-	-	-	-	21	84.0	4	16.0
Electronic funds transfer	-	-	-	-	-	-	3	12.0	22	88.0
Electronic data interchange	-	-	-	-	-	-	4	16.0	21	84.0
Electronic home banking	-	-	-	-	2	8.0	19	76.0	4	16.0
Electronic office banking	-	-	-	-	-	-	6	24.0	19	76.0

The study established that majority (88%) of the respondents indicated that their banks had adopted automated teller machine to a very great extent in carrying out of business activities in the commercial banks. Seven two percent also indicated that they had adopted smart cards to a great extent; this was concurred by 84% who said that MICR innovation was adopted to a great extent. Further, 88% the respondents indicated that their banks had adopted electronic funds transfer to a very great extent while 84% agreed that electronic data interchange was adopted to a

great extent. On electronic office banking, 76% of the respondents revealed that their banks had adopted it to a very great extent.

4.5 Liquidity

The study sought to establish whether adoption of financial innovation had improved liquidity in the commercial banks under study and the following table 4.7 shows the findings on liquidity.

Table 4.8 whether financial innovation has improved liquidity in the banks

	Frequency	Percent
Strongly agree	18	72.0
Agree	7	28.0
Neither agree or disagree	-	-
Disagree	-	-
Strongly disagree	-	-
Total	25	100

Majority of the respondents strongly agreed that the financial innovation had improved liquidity in the banks and this was represented by 72% whereas 28% agreed that the innovations in the bank had improved. The business module for certain banks has and is based on getting funding from other financial institutions due to the lack of customer deposits. As soon as the other financial institutions decline to assist, they are no longer in control of their own destiny hence the high adoption of financial innovations to improve the liquidity and avoid such a risk.

4.6 Asset quality

The study sought to establish whether the financial innovation in the banks had contributed to the improvement of asset quality. The following table 4.8 shows the results of the findings.

Table 4.9 whether financial innovation has improved asset quality in the banks

	Frequency	Percent
Very positively	6	24.0
Positively	19	76.0
Neither positively nor negatively	-	-
Negatively	-	-
Very negatively	-	-
Total	25	100

The study indicated that majority of the respondents 76% said that financial innovation had positively improved asset quality in the banks whereas a further 24% said that the innovations had very positively impacted on the asset quality. The high results shows that commercial banks in Kenya have realized that risks to the solvency of financial institutions most often derive from impairment of assets hence the adoption of financial innovations so as to improve asset quality and to safeguard the assets as well.

4.7. Earnings

The following section of the study sought to establish whether the financial innovation had improved the earnings in the banks and trend of growth of profit after tax for the last five years since the bank adopted the innovations. The following table 4.9 shows the results of the findings.

Table 4.10 whether financial innovation has improved the earnings in the banks

	Frequency	Percent
Strongly agree	13	52.0
Agree	12	48.0
Neither agree or disagree	-	-
Disagree	-	-
Strongly disagree	-	-
Total	25	100

From the table, the study indicated majority of the respondents strongly agreed that financial innovation had improved the earnings in the banks and this was represented by 52% while a further 48% agreed that innovation had improved profitability in the commercial banks.

4.7.1. Trend of growth in earnings

The following section of the study sought to show the trend in growth of earning for the last five years since the bank adopted the financial innovation. The following table 4.10 shows the growth in earnings.

Table 4.11 Aspect of Performance

Aspect of performance	Years					
	2004=100	2005	2006	2007	2008	2009
Profit after tax	100	110	110	110	110	110

The study established that the level of performance realized in terms of earnings of profit after tax and the study shows that all the companies have had growth of earning by 10% from the year 2005 to 2009 and this was represented by 110 increases in earnings for all the companies interviewed.

4.8 Regression Analysis

A multivariate regression model was applied to determine the relative importance of each of the four variables in relation to innovations in the respective banks.

The regression model was as follows:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + e$$

Where:

$$D = k + \alpha_1 t + \alpha_2 c + \alpha_3 a + \alpha_4 i + e$$

Where:

D, Performance of commercial banks;

t , is capital adequacy;

c , is asset quality,

a , earnings and

i , is Liquidity

K = a constant/the proportion of various elements

e = the error term

Table 4.12: Model Summary for Performance of commercial banks

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.097(a)	.749	.981	4.223	.009	.009	1	1	.938

Source, Researcher (2010)

a Predictors: (Constant), Capital adequacy, asset quality, earnings and liquidity

Adjusted R^2 is called the coefficient of determination and tells us how the innovation of commercial banks varied with the capital adequacy, asset quality, earnings and Liquidity. From Table 4.6 above, the value of adjusted R^2 is 0.981. This implies that, there was a variation of 98.1% of innovation of commercial banks varied with the capital adequacy, asset quality, earnings and Liquidity at a confidence level of 95%.

Table 4. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.200	18	.289	1.799	.161
	Residual	1.766	11	.161		
	Total	6.967	29			

The value of R square indicates that at least 74.9% of the observation can be attributed to the innovation. Thus the model provides a good fit for the data. Since the regression sum of squares is large compared to the residue sum of squares, this indicates that the model accounts for most of the variation in the dependent variable.

Table 4.13: Commercial banks Coefficients results

Model		Unstandardized		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.833	3.156		1.839	.317
	Capital adequacy	2.771	.061	.097	.097	.938
	asset quality	0.216	.018	.094	.094	.923
	earnings	0.358	.311	.090	.090	.978
	Liquidity	0.574	.418	.097	.097	.967

Source, Researcher (2010)

a Predictors: (Constant), Capital adequacy, asset quality, earnings and Liquidity

From the data in the above table 4.6, there is a positive relationship performance of commercial banks and the Predictor factors which are capital adequacy, asset quality, earnings and Liquidity.

In commercial banks the established regression equation was

$$Y = 5.833 + 2.771 X_1 + 0.216 X_2 + 0.358 X_3 + 0.574 X_4$$

From the above regression model, holding capital adequacy, asset quality, earnings and Liquidity, Performance of commercial banks at a constant would be 5.833, its established that a unit increase in Capital adequacy at commercial banks would cause an increase in performance by a factor of 2.771, a unit increase in asset quality would cause an increase in performance by a factor of 0.216, also a unit increase in earnings would cause an increase in performance by a factor of 0.358, further unit increase in Liquidity would cause an increase in performance by a factor of 0.574. This clearly shows that there is a strong relationship between performance of commercial banks and its capital adequacy as indicated by a factor increase of 2.771.

The regression model accepted the significance with a t-test of 95% ($p=0.05$) which the results shows value of Adjusted R square as at least 98.1% of the observation can be attributed to innovation. Thus the model provides a good fit for the data and hence there is a positive relationship between financial innovations and financial performance of commercial banks in Kenya.

4.9 Summary and the Interpretation of the Findings

Through innovation financial performance has improved over the period the research covered. Use of ATM, electronic funds transfer, smart card etc has increased. Due to competition that is in the financial institutions industry, most banks have developed new products through modification of products of their competitors or improved on the features of the products or services that they are offering. Majority of the respondents agreed that adoption of financial innovation was very important in the improvement of capital adequacy of commercial banks. Further the respondents rated the importance of adoption of financial innovation by commercial banks as high. The study also found out that financial innovation had improved the capital adequacy of the bank to a great extent; this was revealed by majority of the respondents. On whether commercial banks were adopting financial innovations, majority of the respondents

agreed that their banks were adopting financial innovation to improve their operations and so as to remain competitive in the market. Moreover, majority of the respondents indicated that their banks had adopted to a great extent innovations such as automated teller machine, smart cards, MICR, electronic funds transfer, electronic data interchange, electronic home banking and electronic office banking in carrying out business activities.

The study also sought to find out whether adoption of financial innovations had improved the liquidity of commercial banks in Kenya. From the finding, majority of the respondents agreed that adoption of financial innovations had improved the liquidity of their organizations.

The study also sought to determine how adoption of financial innovations contributes to improvement of asset quality in commercial banks in Kenya. From the findings, majority of the respondents revealed that financial innovation had positively contributed to improvement of asset quality of the commercial banks

Further, the study sought to find out whether the new financial innovations adopted had improved the earnings in the commercial banks. From the study, majority of the respondents agreed that financial innovation had improved the earnings in their organizations. It was apparent that all banks have undertaken financial innovations. The innovations have let to improved financial performance of the banks. The reported earnings and growth in financial performance over the period covered can be attributed to these financial innovations. The study shows that there was growth of sales of 10% from the year 2005 to 2009.

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary.

The purpose of the study was to establish the relationship between financial innovations and financial performance of commercial banks in Kenya. The study was carried out using a questionnaire that was administered to senior managers of the banks.

The study found out that adoption of these financial innovations had improved the capital adequacy of the banks studied and further improved their operations, not only increased their market coverage but also remained competitive in the market. The study also found out that financial innovations had improved the liquidity of their organizations and also improved the asset quality in commercial banks in Kenya; long-term financing that is required for creating long-lived assets is also addressed through financial innovations. The study also found out that financial innovations improved the earnings in the commercial banks. Majority of the commercial banks studied revealed that there was growth of sales of 10% from the year 2005 to 2009. The reported earnings and growth in financial performance over the period covered can be attributed to financial innovations. The researcher would like to conclude that adoption of financial innovations can improve earnings in commercial banks

In general, the study shows the realization of the benefits in relation to financial innovations could be the reason why the adoption of financial innovation by commercial banks in Kenya has been very high in the recent past. Moreover, the study found out that there are five characteristics of innovations that consistently influenced the adoption of new technologies: these are relative advantage, compatibility, complexity, observability and trialability.

5.2 Conclusions

From this study, it can be concluded that there is a positive relationship between financial innovation and financial performance of commercial banks in Kenya. Competition among banks in Kenya has led to continuous innovation. The improved performance was as a result of reduced costs of financial transactions that can be attributed to financial innovations.

Majority of commercial banks in Kenya have invested their resources in new products and technological innovations such as automated teller machine, smart cards, MICR, electronic funds transfer, electronic data interchange, electronic home banking and electronic office banking. These technological innovations had helped the banks in carrying out business activities more effectively and efficiently. The importance of adoption of financial innovation by commercial banks was rated high. Adoption of innovativeness improved firm's performance.

Financial innovations had not only improved the capital adequacy of the organizations to a great extent but commercial banks are adopting financial innovations so to improve their operations and their market coverage and so as to remain competitive in the market. The study established that adoption of financial innovation was very important in the improvement of capital adequacy of commercial banks. Adoption of financial innovations improved the liquidity of commercial bank. Liquidity is the ability of an asset to be converted into cash quickly and without any price discount or without affecting the asset's price. Through financial innovations, banks are able to deepen liquidity in existing markets, for example by reducing excessive reliance on a narrow base of depositors for funding. Moreover, financial innovations contributes to improvement of asset quality and the level of performance realized in earning after tax had increased as observed by the trend in terms of growth for the last five years since the banks adopted the financial innovations .

5.3 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 to adopt new financial innovations since this will provided the benefit of constant access to certain core services and reducing the need for one to go to the banking hall. 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; this means that a proportion of a particular bank's customer base may no longer use the bank's branch network at all. Continuous innovation will lead to increased customer satisfaction due to more choices created of transacting business.

Like many businesses, turnover in banks is high but liquidity is not necessarily high. 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. In product innovation, the banks should introduce products that reduce transaction costs.

Adoption of financial innovations enables operations of commercial banks to be more efficient through making financial services more available and reducing their costs. This was mostly achieved by technological innovations such as automated teller machine, smart cards, MICR, electronic funds transfer, electronic data interchange, electronic home banking and electronic office banking. Financial products that are user friendly promote bank revenues, increase profits, increase liquidity and lower the risks related to the usage of financial services. The researcher also recommends that banks seeking to improve their financial performance to seek financial innovations.

Some financial innovations decrease risk and volatility associated with globalizing markets. With greater globalization, firms, investors and governments are exposed to new risks such as exchange rate, interest rate and political risks which innovations seek to manage.

5.4 Limitations Of The Study

The target population in this study consisted of commercial banks that were dully registered with Central Bank of Kenya, this left out the larger population of financial institutions such as SACCOs, Insurance companies who have also established financial innovations in their operations.

Another limitation of the study was that, the sample of this study, consisted mostly of highly educated managers (IT managers, finance managers and Business managers), it is likely that the study restricted itself only to a certain group with similar demographic characteristics. The sample size used in the study could therefore be considered to be not representative enough.

The study also used drop-pick later method of the questionnaires in data collection; this is suspected to be the reason for non-response in some questionnaires as compared to the case

where the researcher personally administers the questionnaires and takes the respondents through the process. Personal administration of questionnaires would ensure data collected is adequate.

5.5 suggestions for further studies

The research recommends the following areas for further studies:

The researcher suggests that for effective conclusive study on relationship between financial innovations and improvement in financial performance, a replicate study be carried out in another industry for example the insurance sectors for comparison of results. Probably a case study/in-depth approach would uncover more.

Questionnaires targeting finance managers and ICT managers were used to collect data in this study. The researcher suggests that in future studies be conducted using an interview guide and involving the respondents into discussions. This would help the researcher direct the conversation toward the topics and issues on financial innovations adopted and the challenges faced. The sample size should also be increased to cover more management staff.

Certainly, acknowledging that financial institutions are currently adopting financial innovations in their business operations, the researcher suggest that a further study to be carried to establish whether adoption of financial innovations increases the demand for product or services from commercial banks.

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APPENDICES

Appendix 1: letter of introduction

Appendix 2: Listed Commercial Banks in Kenya

1. African Banking Corporation
2. Bank of Africa
3. Bank of Baroda
4. Bank of India
5. Barclays Bank of Kenya
6. CFC Bank
7. Charterhouse bank
8. Chase bank
9. Citibank
10. City Finance bank
11. Co-operative bank of Kenya
12. Commercial Bank of Africa
13. Consolidated bank
14. Daima bank (Statutory)
15. Development bank of Kenya
16. Diamond Trust bank
17. Dubai bank
18. EABS bank
19. Euro Bank
20. Equatorial Commercial bank
21. Equity bank
22. Family bank
23. Fidelity Commercial
24. Fina bank
25. Giro commercial bank
26. Guardian bank
27. Habib A.G.Zurich
28. Habib bank
29. Imperial Bank

30. Investment and Mortgages bank
31. K-Rep bank
32. Kenya Commercial bank
33. Kenya Post Office Savings Bank
34. Middle East bank
35. National bank of Kenya
36. National Industrial Credit bank
37. Oriental Commercial bank
38. Paramount Universal bank
39. Prime Bank
40. Southern Credit bank
41. Stanbic bank
42. Standard Chartered bank
43. Trans-National bank
44. Victoria Commercial bank
45. Eco bank

Source: (CBK, 2009

Appendix 3: Questionnaire

Section A: back ground information

1. Please indicate your gender by ticking in the brackets.

- () Female () Male

2. What is your total experience in the banking industry? (Please tick inside the relevant brackets)

- 1 year [] 2 -5 years [] 5-10 years [] over 10 year []

3. How long have you worked with your current bank?

- 1 year [] 2 -5 years [] 5-10 years [] over 10 year []

4. Kindly indicate your job designation.

- Finance manager [] IT Manager []
- Business Manager []
- Others please specify.....

5. Please tick the age bracket in which you fall:

- Below 20 years [] 21-30 years []
- 31 – 40 years [] 41 – 50 years []
- 51 – 60 years [] Above 60 years []

6. Please indicate the level of education

- Diploma [] Advanced Diploma []
- First Degree [] Master Degree []

Section B: Capital adequacy

7. Would you agree that the adoption of financial innovation is very important in the improvement of capital adequacy of commercial banks?

☐Strongly Agree ☐Agree ☐neither Agree or Disagree ☐Disagree ☐Strongly Disagree

Please give reasons for your answer

.....

.....

.....

8. How would you rate the importance of adoption of financial innovation in the improvement of the capital adequacy in the organisation?

☐Very high ☐high ☐moderate ☐low ☐negligible

9. To what extent has financial innovation improved the capital adequacy of the bank?

☐Very great extent ☐Great extent ☐Moderate extent ☐low extent ☐No extent

Please explain

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.....

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.....

10. Do you agree that commercial banks are adopting financial innovations to improve their operations?

☐Strongly Agree ☐Agree ☐Neither Agree or Disagree ☐Disagree ☐Strongly Disagree

Please explain

.....

.....

.....

.....

11. How would you rate the adoption of the following innovations in carrying out business activities? 1-Not applicable, 2=to a less extent, 3 to a moderate extent, 4= to a great extent, 5 to a very great extent)

	1	2	3	4	5
Automated Teller Machine					
Smart Cards,					
Telephone Banking					
MICR					
Electronic Funds Transfer					
Electronic Data Interchange					
Electronic Home banking					
Electronic office banking					

Section C: Liquidity

12. In your opinion has the adoption of financial innovation improved liquidity at your organization?

☐ Strongly Agree ☐ Agree ☐ Neither Agree or Disagree ☐ Disagree ☐ Strongly Disagree

Please explain

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Section D: Asset quality

13. In your opinion, how has the adoption of financial innovation contributed to improvement of asset quality?

Very Positively [] Positively [] Neither Positively nor negatively []

Negatively [] Very negatively []

Please explain

.....

.....

.....

Section E: Earnings

14. In your opinion have new financial innovations improved earnings in your organization?

☐Strongly Agree ☐Agree ☐Neither Agree or Disagree ☐Disagree ☐Strongly Disagree

Please explain

.....

.....

.....

The following is the aspect of business performance. Please indicate the trend in terms of growth for the last five years since the Bank adopted financial innovation. Indicate in the table under each year since, 2006, the level of performance realized in terms profitability. By taking year 2004 as the starting point (2004= 100), indicate the change in performance of the business for years, 2005, 2006, 2007, 2008 and 2009. For example if the growth in 2005 was 10% compared to previous year , then write 110% under that year, and if the there was a decline of 10% then write 90%.

Aspect Of Performance	Years					
	2004=100	2005	2006	2007	2008	2009
Profitability Profit after Tax						