DETERMINANTS OF FINANCIAL INNOVATION AND ITS IMPACT ON FINANCIAL PEFORMANCE OF MICROFINANCE INSTITUTIONS IN KENYA

BY

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DECLARATION

j hereby declare that this is my original work and has not been submitted to any University for award of degree.

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Signature....^*.................Date. Jt1'/. 11

This research project has been submitted for examination with my approval as the University

supervisor.

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DEDICATION

I dedicate this project to my dear wife Milia and our lovely son Joram.

ACKNOWLEDGEMENT

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LIST OF ABBREVIATIONS AND ACRONYMS

ADB- Asian Development Bank

AMFI- Association of Microfinance Institutions

ATM- Automated Teller Machines

CARD- Centre for Agriculture and Rural Development

DTM- Deposit Taking Microfinance

CBK- Central Bank of Kenya

EFT- Electronic Funds Transfer

M- Mean

MFIs- Microfinance Institutions

MIX- Microfinance Information Exchange

NIFs- Note Issuance Facilities

NYSE- New York Stock exchange

OBS- Off balance sheet

OID-Original issue deep discount bonds

RTGS- Real Time Gross Settlement

SBCS- Small business credit scoring

SD - Standard Deviation

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ABSTRACT

Microfinance institutions play a vital role in the economic development of many developing countries through the provision of a wide range of financial products and services to the poor, low-income households and micro and small enterprises. This study investigated the factors that influence financial innovation in MFI's and its impact on financial performance in microfinance institutions in Kenya. Financial innovation in Microfinance institutions in Kenya has been influenced by new technology, macroeconomic conditions (e.g. interest rates, inflation), demand for financial services and client's ability to use innovation, cost reduction, increase in financial risk, and competition in financial service markets, size of financial institution and legislation and financial supervision.

The research project was a census study of MFIs registered with the Association of Microfinance Institutions (AMFI) in Nairobi. Kenya. Primary data was collected through a questionnaire administered to the MFI's. A conceptual model was developed to show factors influencing financial innovation in MFI.s and its impact on financial performance. An analytical model was developed to determine the strength of the relationship between variables.

Analysis of the data confirmed that new technology, macroeconomic conditions (e.g. interest rates, inflation), demand for financial services and client's ability to use innovation, cost reduction, increase in financial risk, had the greatest importance in influencing MFI innovation.

Financial innovation and financial performance is positively related. As noted, the findings based on the coefficient of regression, new products/services, new processes, institutional innovation, and new technology were found to be positively associated with financial performance in MFIs in Kenya.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Since the late 1970s there has been an enormous amount of innovation in the provision of financial services to poor clients, operating at the systemic and institutional levels as well as on financial processes and products. New sets of techniques have been developed and applied by institutions such as Grameen Bank in Bangladesh and Bank Rakyat Indonesia. It is now accepted that poor and near-poor households can be a profitable market niche for innovative financial services (McGuire & Conroy, 1998).But. as recent developments in Bangladesh and the Philippines have shown, there is great scope for further innovation to enable specialist microfinance institutions (MFI) to reach poor households that still do not have access to financial services, and to provide more and better products and services to those that do. The policy and regulatory environment should promote continuous innovation, as well as being open to innovation itself. Financial innovation for the poor has relied heavily on support from government and donor agencies (McGuire and Conroy, 1998).

Microfinance institutions (MFIs) play a vital role in the economic development of many developing countries. They offer loans and/or technical assistance in business development to low-income community in developing countries (Hartungi, 2007). They have a variety of products including micro loans, savings and other deposit products, remittances and transfers, payment services, insurance, and any other financial product or service that a commercial bank does not offer to low-income clients in the banking system. It is generally accepted in the management literature that "best practice' organizations should adopt a client focus, and develop systems that encourage continuous improvements in products and services to serve clients better. Organizations providing financial services to the poor are no exception. They should constantly monitor the economic, social, technological and other environments.

In Kenya, according to Ogwae (East African standard Feb. 2007) in early 1990,s the top financial institutions made major strategic shifts that threw many customers out of their banking halls in pursuit of profits. They then proceeded to shut down branches in rural areas and other localities

that would not bring huge profits. They ignored the poor because of perceived high risks, high costs involved in small transactions, perceived low relative profitability, and inability of the poor to provide the physical collateral usually required by such <u>instituti</u>ons. This left a big financial intermediation gap leading to the emergence of Micro finance institutions. The microfinance institutions have been carrying out financial innovations such as mortgage products, introduction of ATMs, reduction in interest rates, e-banking and micro insurance and hence enhancing financial innovation and access to financial services for the unbanked and financial sector development in Kenya. All these are meant to ensure they remain competitive in providing financial services to the poor. To achieve this, the micro-finance institutions have continuously adopted financial innovations in order to reach their clients.

This study examines the factors, both external and internal responsible for financial innovations in micro finance institutions in Kenya. The effects of financial innovation on financial performance in MFIs are also analyzed. Financial innovations lower cost of capital, reduce financial risks, improve financial intermediation, and hence welfare enhancing.

1.2 Statement of the problem

The significance of financial innovation is widely recognized. Many leading scholars, including Miller (1986) and Merton (1992). have highlighted the importance of new products and services in the financial arena. Empirically, Tufano (1989) showed that of all public offerings in 1987, 18% (on a dollar-weighted basis) consisted of securities that had not been in existence in 1974. These innovations are not just critical for firms in the financial services industry, but also impact other companies: for instance, enabling them to raise capital in larger amounts and at a lower cost than they could otherwise. The studies identify the drivers of financial innovation to include environmental conditions, technological development, and macroeconomic conditions (economic growth, interest rates and exchanges rates) changes in tax legislation, size of the institution, cost reduction and willingness to take risks. White and Frame (2002) state that. Profit-seeking enterprises and individuals are constantly seeking new and improved products, processes, and organizational structures that will reduce their costs of production, better satisfy customer demands, and yield greater profits.

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 (Van Home 1985; Miller 1986. 1992; Mayer 1986; Cooper 1986), Mbogo and Ashika (2010).

Studies show that since the late 1970s there has been an enormous amount of innovation in the provision of financial services to poor clients, operating at the systemic and institutional levels as well as on financial processes and products. New sets of techniques have been developed and applied by institutions such as Grameen Bank in Bangladesh. It is now accepted that poor and near-poor households can be a profitable market niche for innovative financial services (McGuire & Conroy, 1998).But. as recent developments have shown, there is great scope for further innovation to enable specialist microfinance institutions (MFI) to reach poor households that still do not have access to financial services, and to provide more and better products and services to those that do. Kenyan MFIs have continuously faced many challenges including lack of proper regulatory environment and lack of funds. Operating and financial costs are high, and on average, revenues remain low. It is therefore important to find cost-effective ways of improving standards and encouraging innovation to reduce costs, increase outreach, and boost overall profitability. The Kenyan MFIs should develop viable financial products relevant to the target markets. By seeking data from an array of microfinance institutions in Kenya, this research enriches and contributes the existing literature on financial innovation in the microfinance sector in Kenya.

It is against this background that this study was conducted to find factors, both external and internal, driving financial innovation in micro finance institutions in Kenya. The effects of financial innovation on financial performance in MFIs are also analyzed.

1.3 Research objectives

a) To investigate the factors influencing financial innovation in micro finance institutions in Kenya.

b) To investigate the relationship between financial innovation and financial performance of microfinance institutions in Kenya.

1.4 Importance of the study

To micro finance institutions and investors: The findings will help to identify the costs, benefits and risks arising from financial innovations and consequently help the microfinance institutions to reduce the costs and risks while reaping the benefits to its shareholders/owners and the society.

To government: To help the government to come/up with necessary legislations that enhance development of financial innovations and understand the risks involved in undertaking financial innovations and take the necessary precautions. It will help the government to come up with regulations governing the operation of MFIs.

To Donors: It will help the donors to come up with strategies of developing their clientele. This is in terms of risk information systems among the MFIs and strategic planning for market development.

To **Academicians:** It will help to stimulate interest for further research on areas that have not been covered in this study. It will also add to the body of knowledge on financial innovations and financial performance in microfinance institutions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

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 (Van Home 1985; Miller 1986. 1992; Mayer 1986; Cooper 1986; Campbell 1988. Siegel 1990; Finnerty 1992; Merton 1992; Kopcke 1995; Tufano 1995; Lea 1996; Finnerty and Emery, 2002).

According to Kogar C.I (1995). Innovation is normally defined as the introduction of a new product to a market or the production of an existing one in a new manner. Financial innovations occur because market participants are constantly searching for new ways to make greater profits. The process of "financial innovation" includes changes in financial instrument, institutions, practices and markets. In broad sense, financial innovation affects the nature and composition of monetary aggregates through new financial instruments or changes in old instruments as well as the term and conditions of debt/credit arrangements. Innovations can be grouped by a functional basis, "aggressive" or "defensive". Aggressive innovation is the introduction of a new product or process, in response to perceived demand. A very large part of innovation since at least the late 1970s is aggressive innovation in the literature. Defensive innovation is response to changed environment or transaction cost. Financial innovations lower the transaction cost of transferring funds from lower yielding money balances to higher yielding alternatives. Therefore, with financial innovations market participants attempt to minimize risk and to maximize return.

Financial innovations are mainly the result of four interrelated factors:
High, variable and unpredictable inflation, interest rates and exchange rates, increase in government deficits and their effects on interest rates and financial markets, floating exchange rates: Many financial innovations offer protection against changes in the financial environment, especially changes in exchange and interest rates.

Technology: The development of new technology can stimulate financial innovation by lowering the cost of providing new financial services and instruments by using computers and telecommunication. The rapid development of technology in the financial sector, the introduction of new communication and transmission systems also speeds up information flows.

Changes in the Regulatory Environment: The relationship between regulation and innovation is the most debated in the literature. It is clear that each can cause the other, but it is not clear how significant such effects have actually been.

Changes in Perceived Market Conditions: Financial innovation is fundamentally market driven. Firms offer new products because it is profitable. In other words, because the customer demand them or at least will pay for them. The existing structure of the financial industry, degree of concentration and competition in the financial sector, ease of entry, profitability, extent of development and of specialization among different types of financial instruments, and available choice of portfolio assets, interaction of market forces with regulations effects financial innovations. Changes in the international financial environment and the increasing integration of domestic and international financial markets also lead financial innovation.

Financial innovations arise as a device on the part of the private financial sector to solve or to argument conflict between the newly developing economic and technical conditions, old statutory financial framework and regulations which played an important role in the past but which have then become obsolete. Financial innovation is fighter promoted when the financial authorities recognize the obsolescence of the existing statutory framework and deregulate the essential part of it (Suzuki 1986). Financial innovations occur because agents in market are searching for new ways to make higher profits. A change in the economic environment will stimulate a search for innovations that are likely to be profitable. Starting in the 1960 individuals and financial institutions operating in financial markets were confronted with drastic changes in economic environment, inflation and interest rates climbed sharply. Many financial intermediaries thought that there were profit in those funds and in order to survive, they searched for new financial products that could be profitable.

The last 25 years have witnessed acceleration in the process of financial innovation. This has been spurred largely by increased volatility of exchange rates, interest rates and commodity

prices and an increase in the pace of tax and regulatory change. The resulting financial innovations may be classified as:- New financial intermediaries (e.g. venture capital funds), New financial instruments (e**.g**.collateralized mortgage obligations or credit derivatives), New financial markets (e.g. insurance derivatives), New financial services (e.g. e-trading or e-banking) and New financial techniques (e.g. LBOs). Such financial innovations and their globally reaching migration from mature to emerging markets are generally construed as beneficial to host financial sectors because they bring about a lower national cost of capital; presumably by allowing the transfer of risk from firms less able to bear risk to those which are better equipped to bear it (division of labor), financial intermediation is improved and national welfare is enhanced. In the best of finance theory tradition, however, one cannot talk about a lower cost of capital or a higher yield without raising the question of risk. Of course we have to stretch the concept of portfolio theory somewhat to talk about the risk - presumably systemic - of a national financial system.

Innovation is clearly an important phenomenon in any sector of a modern economy. Although standard microeconomic theory (rightly) focuses much of its attention on the issues of static resource allocation and economic efficiency, there is nevertheless general appreciation that performance over time is driven by a variety of dynamic factors, including innovation. The centrality of finance in an economy and its importance for economic growth, naturally raises the importance of financial innovation. Since finance is an input for virtually all production activity and much consumption activity, improvements in the financial sector will have positive direct ramifications throughout the economy. Further, since better finance can encourage more saving and investment and can also encourage better (more productive) investment decisions, these indirect positive effects from financial innovation are yet greater still.

2.2 Types Of Financial Innovations

Financial innovation is the catalyst behind the evolving financial services industry and the restructuring of financial markets. It represents the systematic process of change in instruments, institutions and operating policies that determine the structure of our financial sytem. Schrieder

and Heidhues (1995) have proposed a useful distinction between four different types of financial innovation:

Financial system innovation: Are innovations in the financial system as a whole, such as changes in the structure of the financial sector or in the legal and regulatory framework. Important examples include the use of the group mechanism to retail financial services, formalizing informal finance systems, reducing the access barriers for women, or setting up a completely new service structure. A striking example of financial system innovation is the liberalization of interest rates in the financial system at large, which occurred in Indonesia in 1983. Among the many far-reaching consequences of this change was the stimulus for the state sector rural bank. Bank Rakyat Indonesia (BRI), to reinvent itself through a series of process and product innovations. According to the Asian Development Bank (2000) "these innovations were introduced within the existing institutional structure but greatly increased both the bank's profitability and its ability to provide financial services to the poor and near poor".

Financial institution innovation: Are changes in the structure, organization and legal form of an institution. An important example of financial institution innovation is the establishment of regulated banks by specialist MFIs. In the Philippines, one of the largest MFIs, the Center for Agriculture and Rural Development (CARD), established the CARD Rural Bank in 1997.This institutional innovation enables MFIs to offer a wider range of financial products to clients, especially on the savings side, and offers greater protection to depositors (ADB, 2000).

Process innovation: The introduction of new business processes leading to increased efficiency or market expansion. Process innovations are often associated with technological progress. Examples include office automation and use of computers with accounting and client data management software.

Product innovation: Such innovations include the introduction of new or modified financial services, such as new credit, savings, insurance, leasing, hire purchase or other financial products. Product innovations are introduced to respond better to changes in market demand or to improve the efficiency of service delivery. Important recent examples of product innovation

by MFIs in Bangladesh have been the provision of new savings and insurance products (ADB. **2000).**

2.3 Theories of Financial Innovation

Greenbaum and Haywood (1973) reviewed the history of American financial market and argued that the growth of wealth is the determinant of demand of financial innovation. In other words, the fast development of an economy caused financial innovation to develop at a high speed. There are four famous theories of the innovation motive, including constraint-induced financial innovation theory of W.L.Silber, transaction cost innovation theory of I licks and Niehans, regulation innovation theory of Davies and Silla, and circumvention innovation theory of Kane.

2.3.1 Constraints- induced financial innovation theory

American economist Silber (1983) advanced constraint-induced financial innovation theory which is one of the most influential theories of financial innovation. This theory pointed out that the purpose of profit maximization of financial institution is the key reason of financial innovation. This theory considers product innovation as the response of an organization to constraints placed upon it. There are some restrictions (including external handicaps such as policy and internal handicaps such as organizational management) in the process of pursuing profit maximization. Though these restrictions not only guarantee the stability of management, they reduce the efficiency of financial institution, so financial institutions strive toward casting them off. Constraint-induced innovation theory discussed the financial innovation from microeconomics, so it is originated and representative. But it emphasized "innovation in adversity" excessively. So it can't express the phenomenon of financial innovation increasing in the trend of liberal finance commendably.

2.3.2 The transaction cost innovation theory

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

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

2.3.3 Regulation innovation theory

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

In this theory which expanded the scope of financial innovation, government activity is also regarded as the origin of financial innovation. But it regards regulation innovation as one part of financial innovation. Especially, it regards rules and regulations which are used to control as financial innovation. Therefore, it is difficult for us to accept this theory. The financial control is the obstructive force of financial innovation, so rules and regulations which are regarded as the symbol of financial control should be the direction of financial reform and innovation.

2.3.4 Circumvention innovation theory

American economist Kane (1981) is the pioneer of circumvention innovation theory. He thinks 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. It comes true through the game between government and microcosmic economic unity.

However. 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 market become more liberal. But his theory is better than constraint-induced financial innovation theory. It not only considered the origin of innovation in the market but also researched the process of regulation innovation and their dynamic relation.

2.4 Determinants of Financial Innovation

2.4.1 Legislation/regulation

Regulation and innovation are intricately linked since regulation is a major cause of innovation whilst innovation sometimes leads to a need for new regulations (Korgar C.J, 1995). Regulation can lead to financial innovation by creating incentive for firms and financial institutions to evade regulations that restrict their ability to earn profits. Kane (1982) describes this process of avoiding regulations as "loophole mining". The economic analysis of innovation suggest that when regulatory constraints are so burdensome that large profits can be made by avoiding them, loophole mining and innovation are more likely to occur. Reserve requirements and restrictions on the interest rates restrict the ability of financial institutions to make profits. Regulation leads

to innovation by Deregulation and by Ham-fisted Regulation: Innovation can occur when the authorities change the operational rules of the financial markets so as to permit activities previously forbidden. Strictly, this is usually reregulation since one regulatory code replaces another even though the new regime is more liberal. Such deregulation can be either formal or informal.

In Ham-Fisted Regulation, it has been argued that the main incentive to innovate is a desire to evade official regulation. In Financial markets conditions are such that evasion is usually possible-due to low transaction costs, homogeneous products, many economic agents, good information etc. Establishment of Eurocurrency market is the example of Ham-Fisted regulation because it was originally developed as a device to evade Regulation Q which was a restriction on the maximum interest paid on bank deposits. Moreover, off-balance sheet lending and off-shore banking can be used to evade a wide range of controls on banks. The monetary policy problems raised by financial innovation process could go far beyond the monetary control strategy. The structural changes may weaken the stability of the monetary and financial system. Several forces related to the innovation process and the factors underlying that process appear to be tending in this direction, although at this stage it is impossible to distinguish the direct effects of high inflation and interest rates from those of financial innovations. Monetary policy and deposit institution regulation promote three major economic goals: Fostering financial stability, contributing the good macro economic performance, securing efficient patterns of financial intermediary.

According to "Regulatory' Dialectic" Kane (1988), when regulatory action as initiating the process, three stages occurs in the adaptive sequence as regulatory avoidance, and re-regulation. When structural changes in regulated market kick off the game, the sequence becomes one of innovation, re-regulation and avoidance. In both sequence, two critical elements exist: The first is a conflict between creative and hard to forecast economic efforts to assert or reassert regulatory control, and the second is that the second or the third stage of any given sequence may also be interpreted as the first stage of a new sequence. In regulatory dialectic, political process of regulation and economic forces of avoidance adopt continually to each other. This altering adaptation is not continuous. Rather it develops as a series of lagged responses. In order to

maintain effectiveness of monetary policy, monetary authorities may change targets, term structure and also targeted variables, operating procedures.

The justification of the financial innovation is within the frame of the financial innovations theory of several analytical paradigms. The constraint theory is that which has more echo. In that theory, the constraints endured by the organizations generate innovations aimed at winning degrees of freedom. The most general interpretation of the phenomenon of the innovation induced by the constraint is the one presented by Silber (1975). He puts the emphasis on the constraint resulting from the regulations. The idea according to which the regulation imposed by the monetary authorities is the engine of the financial innovation finds all its extent with Kane (1983, 1988). By putting the emphasis on the notion of "the dialectic" of regulation, he brings to the fore the relation between the innovative process and the legal constraints where the agents are prompted to bypass the regulation as soon as the balance benefit-cost of membership to the system becomes negative. White, (2000), states that the regulation is a double edged weapon. On the one hand, certain forms of regulation must prohibit some innovations. On the other hand, other innovations can emerge from failed efforts of regulation in order to bypass this regulation. For example, a regulation preventing banks from owning insurance companies won't be able to issue innovations specific to this kind of ownership. What can incite banks to create products like insurance products and services because the cross-ownership is forbidden. Therefore, it is a priori impossible to assign a positive or negative sign to the relation between the rigor of regulation and the dynamics of the financial innovation.

Taking the U.S.A as an example, Ebrahim and Hussain (2010) raised the fact that many regulation constraints press on the U.S. banking system. For instance, the promulgation of the Glass- Steagall Act didn't anticipate the important positive effect that this will have on the development of the American capital markets or on the motivations for the financial innovation. This explains the fact that the American financial market has known a fast and spectacular development compared to the German capital markets (Boot and Thakor, 1997). However, any initiative coming from the financial institutions requires the support of the monetary authorities. This second kind of regulation can either integrate legal texts enabling the offer of a propitious setting to the adoption of financial innovations or that it bluntly imposes to banks the introduction of certain types of innovation.

2.4.2 Technological change

The commercial banking business has changed dramatically over the past 25 years, due in large part to technological change. Advances in telecommunications, information technology, and financial theory and practice have jointly transformed many of the relationship focused intermediaries of yesteryear into data-intensive risk management operations of today. Consistent with this, we now find many micro finance institutions embedded as part of global financial institutions that engage in a wide variety of financial activities (Korgar. 1995).

To be more specific, technological changes relating to telecommunications and data processing have spurred financial innovations that have altered financial products and services and production processes. For example, the ability to use applied statistics cost-effectively (via software and computing power) has markedly altered the process of financial intermediation. Retail loan applications are now routinely evaluated using credit scoring tools, rather than using human judgement. Such an approach makes underwriting much more transparent to third parties and hence facilitates secondary markets for retail credits (e.g., mortgages and credit card receivables) via securitization. Statistically based risk measurement tools are also used to measure and manage other types of credit risks- as well as interest rate risks-on an ongoing basis across entire portfolios. Indeed, tools like value-at-risk are even used to determine the appropriate allocation of risk-based capital for actively managed portfolios. The various innovations in banking and financial sector are ECS. RTGS, EFT, NEFT, ATM, Retail Banking, Debit & Credit cards, free advisory services, implementation of standing instructions of customers, payments of utility bills, fund transfers, internet banking, telephone banking, mobile banking, selling insurance products, issue of free cheque books, travel cheques and many more value added services.

2.4.3 Perceived market conditions (competition)

The standard theory is in favour of a positive relation between competition and innovation. The recent empiric literature examining this relation has found a little obviousness to the Schumpeterian hypothesis and concludes that a strong rivalry on the market encourages financial

institutions to innovate in order to increase their competitive advantages. Allen and Santomero (2001) suggest that the release of the financial innovation process undertaken by banks in the United States appears to be a response to intensified competition in financial markets. Milnes (2006) compares the banking payment infrastructures in various countries such as the UK and Finland, where he finds that in the banking systems, the adoption seems to be also relatively concentrated. In a study on the banking sectors of 11 countries of Latin America, Yildirim and Philippatos (2007) state that a bank rivalry pushes banks to engage in a differentiation of their products offered and allows the financial innovation stimulation.

The financial innovations are used by banks as fearsome strategic variables to get ahead of competition (Tufano, 2003). They become more and more important mainly within a context where banks get organized to give more loans. That way, their adoption has become a must for banks more than a choice and this even in the case of the emergent markets like the Kenyan ones. Despite the recent crisis, the financial innovation is necessary where certain products have become inevitable since they allow banks to have a certain confidence against the risk of failure and represent a measurement tool of the compensation risk. We cite, for example, the credit derivatives known as Default Swap Credit. Literature supports that a successful innovation act gives the bank a competitive advantage and a superior performance. This can't be maintained unless there is a permanent innovation and improvement of the product and of the process (Porter. 2004).

2.4.4 The size of the institution

Many arguments exist supporting a big size. The previous researches suggest that the size of the financial institution is an important factor for the adoption of the financial innovation and that the large financial institutions are more able to pay the fixed costs of developing new-technologies. A second argument in favor of the positive impact of a large size is based on the existence of imperfections in the financial market. In fact, the availability of internal funds is important in the large firms that will allow the financing of the investment associated with the innovation process (Galande and Fuente, 2003). Dow (2007) examines the influence of the size on the decision of the adoption of the web and the PC banking by the credit unions. He finds that

the large credit unions adopting more new technologies are the first to adopt them and offer the most advanced technological versions. The study of Buzzacchi et al. (1995) confirms the positive effect of the size on the distribution of the new technologies such as the ATM's. Studying the impact of the diversification on the activities of firm's innovation, most authors have shown the existence of a negative relation. Boot and Thakor (1997) find that, in a universal banking system, the financial innovation is stochastically inferior to those in a financial system where commercial banks and investment ones are functionally.

2.4.5 Macro-economic conditions

Financial innovations occur because agents in market are searching for new ways to make higher profits. A change in the economic environment will stimulate a search for innovations that are likely to be profitable. Starting in the 1960 individuals and financial institutions operating in financial markets were confronted with drastic changes in economic environment, inflation and interest rates climbed sharply. Many financial intermediaries thought that there were profit in those funds and in order to survive, they search new financial products that might be profitable. These interest-risks also led to financial innovation. The development of variable-rate debt instruments such as certificates of deposits, mortgages, the creation of the futures market for financial instruments and creation of an options market for debt instruments appeared in these periods.

Unstable macroeconomic conditions e.g., fluctuating prices, interest rates, exchange rates — create uncertainties and risks and thus are likely to spur more innovation than would be true in a stable macroeconomic environment. Greater instability is likely to be associated with a faster pace of innovation.

2.4.6 Costs reduction

Profit-seeking enterprises and individuals are constantly seeking new and improved products, processes, and organizational structures that will reduce their costs of production, better satisfy customer demands, and yield greater profits. Sometimes this search occurs through formal research and development programs; sometimes it occurs through more informal "tinkering" or

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trial and error efforts. When successful, the result is an innovation (White & Frame, 2002). To be successful financial innovation must either reduce costs and risks or provide an improved service that meets the particular needs of financial system participants" (ECB. 2003). Financial innovation is thus primarily defined as product and organizational innovation, which allows cost or risk reduction for the single bank and/or an improvement of the services for the financial system as a whole. Campbell (1988), Frame and White (2004) and Tufano (2003) assert that increased perceptions of risk stimulate innovation, which is a plausible argument especially among financial firms which face different forms of market risk (e.g. interest rate, forex risks).

2.5 Empirical Evidence of Financial Innovation

Desai and Low (1987) 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 and 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 intermediary 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 research 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.

In the late 1990s, there are many researches about financial tools innovation of banking industry. Julapa, Anthony and Gregory (1995) researched the effect of bank capital requirements on bank off-balance sheet (OBS) financial innovation. And they find that changes in capital requirements have had no consistent impact on the speed of diffusion across OBS activities. Boot and Thakor (1997) discovered that financial innovation in a universal banking system is stochastically lower than innovation in a financial system in which commercial and investment banks are functionally separated. The universal banking system already could provide the comprehensive financial

services for customers. If it carries on the innovative activities, it will corrode the existing service inevitably.

Based on an empirical study in the financial services sector, Patrick (2003) first describes how financial companies organize their innovative processes and what barriers to innovation can be identified in banks and insurance companies. The author pointed out that large firms often do have more difficulties with the development of new products than smaller firms. The most important changes that are needed for these organizations to become more innovative are concerned with the organizational structure, the underlying values, beliefs and information technology. Michael and Arnold (2004) studied the Hong Kong banking industry to examine the role of information complementarity and market competition in governing the diffusion of off-balance-sheet (OBS) financial innovations. A simultaneous equation model is devised to estimate the impacts of information complementarity, market competition, and a number of other factors on the diffusion of OBS financial innovations. Results of estimation suggest that information complementarity and market competitions are the primary driving forces behind the diffusion process.

2.5.1 Legislation and regulation

Ben-Horim and Silber (1977) tested the proposition that regulatory constraints induce innovation. They constructed a linear programming model to estimate the opportunity costs (shadow prices) of deposits, debentures, and capital (net worth) for large banks from 1952-1972. They found that the rising shadow prices of these items, as they approached regulatory constraints (such as Regulation Q), were associated with some of the major innovations of the 1960s, such as the negotiable CD. Lerner (2002), documented financial patenting activity in the late twentieth century (455 patents between 1971 to 2000). He noted that, although the level of patenting activity has been modest, it increased markedly after a 1998 judicial decision (the State Street Bank case) that allowed for business method patents. Lerner also studied the patenting activity of investment banks and found that it was positively related to the size of the investment banks and to the extent of their indirect academic ties. He also found, however, that the direct involvement of academic institutions or of academics themselves in financial patenting was not related to finance-related research productivity of the institutions or the individuals.

2.5.2 New technology

Furst et al (2002) analyzed survey data on Internet banking as of the third quarter of 1999. Internet banking refers to web-sites that are either exclusively informational in nature or offer the capability to conduct banking business on-line. 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 district 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.

In the course of their study of the effect of SBCS on large banks' portfolio of commercial loans under $100,000 for 1997, Frame et al (2001) find 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 (2000) and 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.

2.5.3 Diffusion and size of institution

Five studies of the diffusion of financial innovations has been done, three of which focus on ATM deployment by banks. These studies generally use hazard models that estimate the adoption pattern of the innovation under study conditional on firm- and market-specific effects.

Hannan and McDowell (1984) find that ~ consistent with the Schumpeterian hypotheses -larger banks and those operating in more concentrated local banking markets registered a higher conditional probability of ATM adoption. This study also found bank product mix, bank holding company affiliation, urban location; branch banking restrictions, and the area wage rate were all positively related to ATM adoption.

In a subsequent study, Hannan and McDowell (1987) find that the conditional probability of ATM adoption is positively related to a rival's adoption and that firms in less concentrated markets react more strongly to rival precedence than do their counterparts in concentrated markets. Consistent with their previous results, bank size and local market concentration were positively related to ATM adoption. Similar results were found for bank holding company affiliation, branch banking restrictions, and market deposit growth. Using the same data, Saloner and Shepherd (1995) find that the expected time to adoption of ATMs declines in both the number of users (deposits) and locations (branches), indicating the presence of network externalities. For limited branching states, market concentration is positively related to ATM adoption speed, while depositor growth is negatively related. For unrestricted states, the area bank wage rate is positively related to ATM adoption speed.

Molvneux and Shamroukh (1996) examine the diffusion of the underwriting of junk bonds and of note issuance facilities (NIFs) during the 1978-1988 and 1983-1986 periods, respectively. The authors find that exogenous factors, such as regulatory or demand changes, played a significant role in the diffusion of junk bond underwriting. Conversely, the diffusion of NIFs underwriting appeared to be motivated by bandwagon effects. Molyneux and Shamroukh argue that banks are more likely to respond to competitive and institutional bandwagon pressures by adopting an innovation when it threatens an existing business, rather than when it represents new business opportunities. Flowever, for both underwriting innovations, the authors find that adoption by one bank makes it more desirable for other banks to follow suit - and this effect increases in the number of adopters.

More recently, Akhavein. et al (2001) examine the diffusion of small business credit scoring (SBCS) by large banking organizations in the mid-1990s. Estimates from a hazard model indicate that larger banking organizations and those located in the New York Federal Reserve district adopted this technology sooner. A tobit model confirms these results and also finds that

organizations with fewer separately chartered banks, but more branches, introduced innovation earlier, which is consistent with theories stressing the importance of bank organizational form on lending style.

2.5.4 Market power.

This hypothesis originates with Schumpeter (1950). who argued that market power is necessary to permit firms to generate sufficient returns from innovation. This is because of: (1) the inherent public good/free rider problems associated with new ideas, and (2) the difficulties of obtaining the finance for the sizable and uncertain investment in research and development (R&D) that is often required for successful innovation.

2.5.5 Consequences: Profitability and Social Welfare.

Studies of the consequences of financial innovation represent the largest number of empirical studies. Silber (1978) examined the effects of a major input innovation for finance: the establishment of the telegraph in the nineteenth century. They find that the telegraph quickly narrowed inter-market price differentials for securities and for foreign exchange across U.S. markets in the 1840s and for bonds between New York and London in 1866. They also find that the establishment of the consolidated tape for New York Stock Exchange (NYSE) securities in 1975 did *not* cause price differentials to narrow between the NYSE and the Midwest Stock Exchange. For this latter case, the authors conclude that the pre-existing telecommunications links were likely sufficient, such that consolidated tape added little value.

Tufano (1989) examined a cross-section of new securities to examine whether financial product innovators enjoy first mover advantages. Specifically, he used a sample of 58 innovations (representing 1,944 public offerings) to test whether investment banks that create new securities benefit by charging higher prices (underwriting spreads) than imitators or by capturing larger quantities. Tufano found that, over the 1974-1986 periods, investment banks that created new products did not charge higher prices in the period before imitative products appear and in the longrun charge lower prices than rivals. However, these innovators underwrote more public offerings of products that they innovated, than did imitating rivals. Overall, Tufano's results are

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 share.

Two papers examined the welfare effects of specific security innovations. First, Varma and Chambers (1990) study the wealth effects associated with the issuance announcement of original issue deep discount (OID) bonds. They find that OID issues announced between March 1981 and June 1982 were associated with positive stock-price responses, while subsequent issues that were not tax-advantaged had no wealth effects. Neither the stated purpose of the debt nor the bond rating explained any cross-sectional variation in abnormal returns. Second. Grinblatt and Longstaff (2000) find that investors use Treasury STRIPS to make markets more complete and to take advantage of tax and accounting asymmetries. The authors estimate a joint model of stripping and reconstitution activity using data for 1990-1994 and find that such activities are positively correlated. They also find that stripping and reconstitution are not driven by valuation differences between Treasury STRIPS and comparable bonds, but rather to the presence of long-dated issue

2.6 Empirical Evidence on Financial Innovation In Kenya

The Kenyan financial sector has undergone tremendous changes in the last two decades. A lot of reforms have been undertaken in the sector that have led to proliferation of financial products, activities and organizational forms that have improved and increased the efficiency of the financial system. Advances in technology and changing economic conditions have created impetus for this change. All these developments coupled with changes in the international financial environment and the increasing integration of domestic and international financial markets have led to rapid financial innovation. However, little empirical evidence exists on the relationships between financial innovation and financial performance in Kenya.

Misati, et al (2010) empirically examined the effect of financial innovation on monetary policy transmission focusing on the interest rate channel through which the Central Bank implements monetary policy. The study used Two Stage Least Squares (2SLS) and monthly data covering the period. 1996-2007 and established that financial innovation dampens the interest rate channel of monetary transmission mechanism. The paper concludes that financial innovation poses

complex challenges to the conduct of monetary policy which would necessitate constant revision of policy and instruments, targeting frameworks and operating procedures to enhance monetary policy effectiveness.

Kihumba. (2008), Unpublished MBA project examined the determinants of financial innovation and its effect on bank performance in Kenya and concluded that there is a linear relationship between the response and predetermined predictor variables.

2.7 The Impact of Financial Innovation on Financial Performance

Theories concerning first mover advantages have typically evolved out of the Schumpeterian argument that new products and processes developed by a firm are protected from imitation for a certain period. A successful innovation thus generates a proprietary competitive position that bestows on the firm a competitive advantage and superior performance.

Berger (2003) argues 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. Humphery et al. (2006) cite ATMs (automated teller machines), telephone banking, internet banking, and e-money as being among the significant innovations affecting the banking distribution system that influence banking performance significantly. Goddard et al. (2007) add that client relation management systems, bank management technologies, and various other technologies are among the major changes in internal banking systems that also have exercised a positive influence on banking performance and profitability. The first institutions to adopt successful new technologies earn extraordinary profits because of the high prices they impose or the increased market shares they acquire. Other banks follow their lead in order to avoid losing market share. If the process of innovation continues and new technologies are introduced over time, innovative banks can continue to earn high profits on the various new or improved products. Consistent with the results of other studies that support the hypothesis that the first mover advantage offers the enterprise better performance, the examination by Dos Santos and Peffers (1995) of the introduction of ATMs (Automatic Teller Machines) by American banks demonstrated that the competitive advantage and performance that is associated with it were not realized by those who subsequently adopted the technology.

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In their examination of the dynamic of financial innovation in the banking industry in the U.K, Batiz-Lazo and 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. They argue that product innovations have a market focus and are effectiveness driven, while process innovations have an internal focus and are efficiency driven. In fact, product innovations are introduced to satisfy an external user or market need, while process innovations are defined as new elements introduced into the firm's production or into the services it provides. The latter are essentially introduced by the firm with a view towards improving its efficiency.

2.8 Summary

Financial innovation is beneficial as it lowers cost of capital, reduce financial risks, improve financial intermediation, and hence welfare enhancing (Frame & White). The external environment influences financial innovation in the financial sector. This includes government regulation, competition, new technology and the economic environment such as increase in inflation and change in exchange rates. The internal environment of the individual financial institution is related to financial innovation. This includes trying to reduce costs and increasing profits through innovation, the size and the age of the institution as well as the willingness to take risks. Institutions that are first movers in innovation and which innovate regularly are likely to have better performance. The external and internal characteristics of an institution affect inefficiency. This can be identified through increased operational costs and decline in profits among others which leads to financial innovation as the institutions endeavor to improve efficiency. Institutions that decide not to innovate may have poor performance whose indicator could be in terms of high operating costs, less number of clients and low return on assets. The ones that decide to innovate will improve their efficiency and hence better performance. They will have high return on assets, lower operating costs and increase in number of clients among others.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The objective of this chapter was to show the research methodology that was used in the study. This chapter is divided into six sections: 3.1 Introduction, 3.2 Research design. 3.3 population of study, 3.4 Sample, 3.5 data collection method 3.6 research model and the diagnostic tests.

3.2 Research design

The study focused on Nairobi City where many micro finance institutions have their headquarters and also due to resource constraints. I carried out a survey of all micro finance institutions registered with AMFI but operating within Nairobi.

33 Population of study

The population of interest was micro finance institutions operating in Kenya. The study cover a period of 6 years between 2005 and 2010 both years inclusive. There are currently 52 MFIs registered with Association of Microfinance Institutions.

3.4 Sample

A Census study of the Micro finance institutions registered.wiih thej^ssodation ^f Microfinance Institutions was done. There are 52 members as of December 2010 according to Association of Microfinance Institutions. A census of all the Microfinance institutions with their headquarters in Nairobi was taken.

3.5 Data collection

Primary Data was obtained through structured questionnaires administered personally by the researcher. The questionnaire was administered through a "drop and pick later" approach. Secondary data on performance was sourced from the microfinance institutions annual financial records.

3.6 Data analysis

3.6.1 Research model

The study identified the factors influencing financial innovation and the financial impact that arise from the influence among micro finance institutions in Kenya.

Conceptual model - There are both predetermined external and internal factors that influence financial innovation. The external environment which includes government regulation, competition, new technology and the economic environment e.g. increase in inflation and change in exchange rates, influences financial innovation in microfinance institutions. The Internal environment of the individual microfinance institution which includes trying to reduce costs and increasing profits through innovation, the size and the age of the institution as well as the willingness to take risks are also related to financial innovation. MFIs that are first movers in innovation and which innovate regularly are likely to have better performance.

The study examined the effe ct of the financial innovation on financial performance of the microfinance institutions in Kenya. The relationship among the variables is stated using a function.

External factors represented by X_1 and Internal factors represented by $X2$,

Variables X_1 and X_2 are rated on a likert scale of 1-5 (1= strongly disagree) to 5 = strongly agree).

The financial innovation is represented by Z and the performance is represented by Y (the effect)

$$Z = f(X_1, X_2) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Eq1$$

Where, Z is a dependent variable and X_i, X_2 are independent variables

$$\text{Therefore } Y = f(Z) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots Eq\ 2$$

An analytical model was developed to test the determinants of financial innovation and the relationship between financial innovation and financial performance. An analytical model of a linear multiple regression equation of the form shown below was developed

$$Y = a + Z(X_1, X_2) + et$$

$$Z = AO + AIL + AIT + AJE + {}^{\wedge}M + ASC + C{}^{\wedge}D + ATS + AGR + ET \qquad \text{Eq 3}$$

Where L- Legislation   D-Demand for financial services

T- Technology   S- Size of the institution

E- Economic conditions   R- Willingness to take risk

M- Market conditions   et- error term

C- Cost reduction   a and o are discriminate coefficients

Factor analysis was performed on the results to show the importance attached to each factor. Factor analysis enables data to be organized in an effectively meaningful way as it provides tools for reducing information into understandable form.

Performance of microfinance institutions was measured by the return on assets (ROA) - change in net profit /total assets,

$$Y = o_0 + 01NPS + o_2NT + o_3NP + o_4I + et \ldots\ldots\ldots \text{Eq 4}$$

Where

NPS- New products/services

NT- New Technology

NP- New processes

I - Institutional Innovation

Diagnostic tests

F-test was tested for joint significance of all coefficients and t-test for significance of individual coefficients.

Measures of central tendency (mean) and a measure of dispersion/variation (standard deviation) were used to analyze the data

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the data that was found on an investigation into the determinants of financial innovation and its effects on financial performance in Microfinance institutions in Kenya. The research was conducted on a sample of 48 MFIs based in Nairobi to which questionnaires were administered. However, only 39 questionnaires were returned duly filled, making a response rate of 81.3% which is an adequate response rate for statistical reporting. According to Mugenda and Mugenda (1999), a response rate of 50% and above is good for statistical analysis. This creditable response rate was made enhanced after the researcher personally administered the questionnaires and made further visits to remind the respondents to fill-in the questionnaires. This study made use of frequencies (absolute and relative) on single response questions. On multiple response questions, the study used Likert scale in collecting and analyzing the data whereby a scale of 5 points were used in computing the means and standard deviations. These were then presented in tables, graphs and charts as appropriate with explanations being given in prose.

4.2 Demographic data

This section presents data on ownership, source of funds, length of operation in Kenya, number of branches and turnover on various factors.

Figure 4.1: Ownership
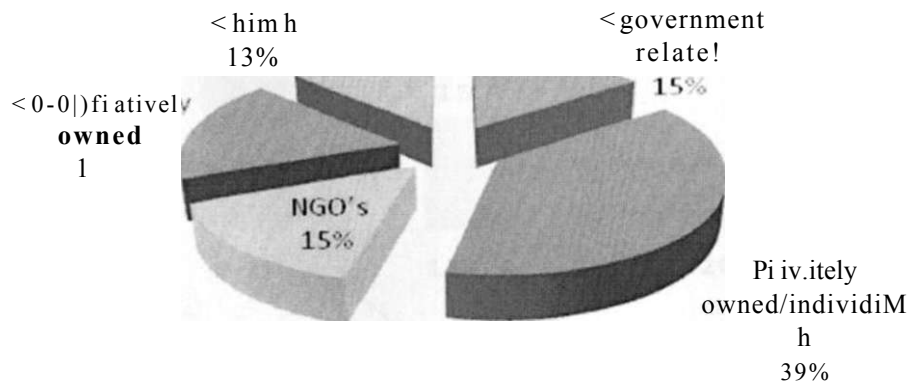
Source: Research data (2011)

From the figure above. 39% of the Micro finance institutions (MFIs) are privately /individuals owned. l8°o are co-operatively owned. 15% are NGO's, 15% are Government related, while only 13% are Church owned. The findings therefore indicated that most of the Micro finance institutions (MFIs) in Kern a are privately owned.

4.2.2 Source of funds

Table 4.1: **Source of Funds**

	Frequency	Percent
Foreign donors/grants	8	20.5
Internally generated funds	21	53.8
Customer deposits	14	35.9
Borrowings/loans	4	10.3

Source: Research data (2011)

From table 4.1 above, internally generated funds had 53.8%, customer deposits (35.9%), foreign donors/grants (20.5%) while borrowings/loans (10.3%). From these findings, internally generated funds are the major source of funds for the MFIs while customer deposits, foreign donors/grants, and borrowings/loans are moderately utilized in financing MFIs.

4.2.3 Length of operation in Kenya

Figure4.2: Length of operation in Kenya

15.4

i o . 3

5.1

Less than 5 yrs   6-10   11-15   1G-20   Over 20 years

Source: Research data (2011)

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From the figure. 35.9% of MFIs have been in operation in Kenya for a period of less than 5 yrs. 33.3% have been in operation for 6- 10 years, 15.4% for a period of 11-15 years, 5.1% for a period of 16-20 years and 10.3% for a period of more than 20 years. The findings therefore indicated that most of the MFIs in Kenya have been in operation for a period of less than 5 years.

4.2.4 Number of Branches in Kenya

Table 4.2: **Number of Branches in Kenya**

Year	Less than 5		6 to 10		11 to 20		Over 20	
2005-2006	23	59%	7	17.9%	4	10.3%	5	12.8%
2007-2008	17	43.6%	14	35.9%	3	7.7%	5	12.8%
2009-2010	16	41.0%	13	33.3%	5	12.8%	5	12.8%

Source: Research data (2011)

From the table, in the year 2005-2006, 59% of MFIs in Kenya had less than 5 branches, 17.9% had 6 to 10 branches, and 10.3% had 11 to 20 branches, while 12.8% had over 20. In the year 2007-2008, 43.6% of MFIs had less than 5 branches, 35.9% had 6 to 10 branches, 7.7% had 11 to 20 branches, while 12.8% had over 20 branches. In the year, 2009-2010. 41.0% had less than 5 branches, 33.3% had 6 to 10 branches 12.8% had 11 to 20 and a similar percentage had over 20 branches. From these findings it can be noted that Majority of the MFIs in Kenya have opened less than 5 branches from year 2005-2010, few have opened 6-20 branches, while very few have opened over 20 branches.

4.2.5 Overall Turnover per annum

Table 4.3: **Overall Turnover per Annum**

	1	2	3	4	5	Mean	STDEV
No. of employees	3	12	12	12	0	2.85	.961
No. of customers	0	2	20	13	4	3.49	.756
Amount of loans disbursed	1	3	14	15	6	3.56	.940
No. of borrowers	1	3	13	13	9	3.67	1.009

Source: Research data (2011)

Key l=No change, 2= Small extent, 3= Moderate extent. 4=large extent, 5=Very large extent

From the table, number of borrowers had a mean score of 3.67 and standard deviation of 1.009, amount of loans disbursed (M 3.56, SD .940), number of customers (M3.49. SD.756), while number of employees (M2.85, SD.961). These findings indicated that in terms of overall turnover per annum, there is high growth in the number of borrowers, amount of loans disbursed and the number of customers, while there is relatively low growth in the of employees for MFIs in Kenya.

4.3 Financial innovation

43.1 Areas of Innovation in the last six years

Table4.4: Areas of innovation in the last 6 years

Areas of innovation :	Frequency	Percent
New products/services	31	79.5
New processes	23	59
[New technology	31	79.5
Institutional innovation	17	43.6

Source: Research data (2011)

From table 4.4, new products/services and new technology had 79.5%, new processes (59) and institutional innovation had 43.6%. From these findings, new products/services, new technology and new processes are the major areas of innovation for the MFIs in Kenya in the last 6 years

4.3.2 Category of Innovation and the Year of Introduction

The table below shows various categories of innovations and the year in which the various MFI's introduced them. These includes the various products /services, businesses proceses, new technologies and institutional innovations used by MFIs to market themselves.

Table4.5: Category of Innovation and the Year of Introduction

Category		2005-2006	2007-2008	2009-2010	None	Total
Mobile banking	freq	1	5	19	14	39
	%	2.6%	12.8%	48.7%	35.9%	100.0
Agency banking	freq	2	2	7	28	39
	%	5.1%	5.1%	17.9%	71.8%	100.0
Branchless banking	freq	4	4	3	28	39
	%	10.3%	10.3%	7.7%	71.8%	100.0
ATM services	freq	10	2	3	24	39
	%	25.6%	5.1%	7.7%	61.6%	100.0
Telephone banking	freq	2	1	4	32	39
j p **H R** P	%	5.1%	2.6%	10.3%	82.1%	100.0
Information technology	freq	13	11	10	5	39
	%	33.3%	28.2%	25.6%	12.8%	100.0
Private banking	freq	3	8	2	26	39
	%	7.7%	20.5%	5.1%	66.7%	100.0
Youth oriented accounts	freq	4	6	12	17	39
	%	10.3%	15.4%	30.8%	43.6%	100.0
Women related accounts	freq	4	7	13	15	39
	%	10.3%	17.9%	33.3%	38.5%	100.0
' Children related accounts	freq	6	6	9	18	39
	%	15.4%	15.4%	23.1%	46.2%	100.0
! Small businesses accounts	freq	8	10	8	13	39
	%	20.5%	25.6%	20.5%	33.3%	100.0
Credit cards	freq	4	8	3	24	39
i %		10.3%	20.5%	7.7%	61.5%	100.0
House mortgages	freq	5	2	4	28	39
(%		12.8%	5.1%	10.3%	71.8%	100.0
Personal loans	freq	13	11	7	8	39
r %		33.3%	28.2%	17.9%	20.5%	100.0
Micro-insurance	freq	7	10	8	14	39
1 %		17.9%	25.6%	20.5%	35.95	100.0
Savings mobilization& credit services	freq	13	8	8	10	39
f %		33.3%	20.5%	20.5%	25.6%	100.0
Asset financing	freq	7	10	8	14	39
	%	17.9%	25.6%	20.5%	35.9%	100.0

Source: Research data (2011)

From the table, mobile banking with a percentage of 48.7% was the most adopted innovation between 2009 and 2010 by MFIs in Kenya. Agency and branchless banking (None 71.8%) had

not been adopted by most MFIs between the entire periods of 2005-2010. ATM services, telephone banking, private banking, youth oriented accounts, women related accounts, children related accounts , small businesses accounts, credit cards, house mortgages and asset financing (None 61.6% , 82.1%, 66.7%, 43.6%, 38.5%. 46.2%, 33.3%, 71.8% and 35.9% respectively) had not as well been adopted by most MFIs between the entire periods of 2005-2010. However, most MFIs had adopted personal loans, savings mobilization and credit services effected in the years 2005-2006 (33.3%). From these findings it can be concluded that mobile banking, personal loans, savings mobilization and credit services were the most adopted innovations by MFIs in Kenya, while ATM services, telephone banking, private banking, youth oriented accounts, women related accounts, children related accounts , small businesses accounts, credit cards, house mortgages and asset financing were least adopted between year 2005-2010.

4.3.3 The Last time when institution undertook financial innovation

Figure 4.3: Last time when institution undertook financial innovation

- 1-6 months   - 7-12 months   13-18months   - 25-30 months   Not recently
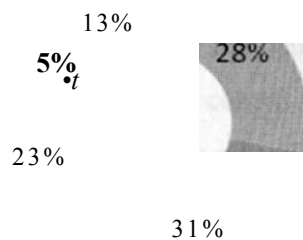
Source: Research data (2011)

From figure 4.3 above, 31% of the MFIs undertook financial innovation for the last 7-12 months, 28% for the last 1-6 months, 23% for the last 13-18 months, 13% had not taken innovation recently while 5% had taken innovation in 25-30 months ago. The findings indicated that for those MFIs that had undertaken financial innovation, they had done it in the last 7-12 months.

4.3.4 Importance of different financial innovation trends in MFIs

Table 4.6: Importance of different financial innovation trends in MFIs

	1	2	3	4	5	Mean	STDEV
New services	1	0	0	9	29	4.67	.737
New products	0	0	2	11	26	4.62	.590
| Changes in business processes	2	4	5	11	17	3.95	1.213
Institutional changes	2	7	10	11	9	3.46	1.189

Source: Research data (2011)

(Key ; I=Not Important. 2= slightly important 3=moderately important 4= Important 5= Very important)

From the table, new services had a mean score of 4.67 and standard deviation of 0.737, new products (M 4.62, SD 0.590), changes in business processes (M3.95. SD1.213) and institutional changes (M 3.46, SD1.189). From the findings, new services, new products and changes in business processes are the most important financial innovation trends in MFIs in Kenya.

4.4 Determinants of financial innovation

This section covered findings on questions posed to respondents to determine the extent to which the predetermined factors influence financial innovation (relationship between financial innovation and its determinants). Measures of central tendency (mean) and a measure of variation (standard deviation) was used to analyse data. The range of "not at all" (1) to a "very great extenf' (5) on a likert scale was used. Scores of' not at all/small extent" taken to present a variable which had a mean score of 0-2.4 on the continuous likert scale (0<SE<2.4), moderate extent 2.5<ME<3.4, great extent and very great extent 3.5<GE<5.0. A devation of >1 implies a significant difference on impact of the variable among respondents. An analytical model was established through regression analysis. The regression equation of determinants of financial innovation was established as shown in table 4.16. The response variable was taken to be financial innovation and the independent variables are legislation and financial supervision, new technology, demand for financial services and client's ability to use innovation, size of financial institution, macroeconomic conditions such as inflation, interest rates, competition in financial service market, increase in financial risk and cost reduction.

4.4.1 Factors influencing financial innovation

Table 4.7: Extent of influence of the predetermined factors on financial innovation

Influencing factor	1	2	3	4	5	Mean	STDEV
Legislation and financial supervision	2	15	6	12	4	3.03	1.158
New Technology	1	2	5	18	13	4.03	.959
Demand for financial services & clients ability to use innovation	0	3	6	24	6	3.85	.779
Size of financial institution	2	11	8	13	5	3.21	1.151
Macroeconomic conditions e.g. interest rates, inflation	0	5	4	16	14	4.00	**1.000**
Competition in financial service markets	0	11	9	15	4	3.31	1.004
Increase in financial risk	1	6	9	15	8	3.59	1.069
Cost reduction	0	4	6	22	7	3.82	.854

Source: Research data (2011)

(Key 1= not at all, 2=Small extent, 3=Moderate extent, 4=Great extent, 5= Very great extent)

From the table, new technology had a mean score of 4.03 and a standard deviation of .959 macroeconomic conditions e.g. interest rates, inflation had a mean score of 4.00 and a standard deviation of 1.000, demand for financial services and clients ability to use innovation (M 3.85, SD.779), cost reduction (M 3.82, SD.854), increase in financial risk (M 3.59, SD1.069), competition in financial service markets (M 3.31, SD 1.004), size of financial institution (M3.21, SD 1.151), legislation and financial supervision (M 3.03, SD 1.158). Scores of' not at all/small extent" taken to present a variable which had a mean score of 0-2.4 on the continuous likert scale $(0<SE<2.4)$, moderate extent $2.5<ME<3.4$, great extent and very great extent $3.5<GE<5.0$. From these findings, new technology, macroeconomic conditions e.g. interest rates, inflation, demand for financial services and clients ability to use innovation, cost reduction and increase in financial risk greatly influence financial innovation in MFls in Kenya, while competition in financial service markets, size of financial institution and legislation and financial supervision have moderate influence.

A factor analysis was performed on the factors influencing financial innovation to uncover relationships amongst the variables and the importance attached to each of the factors (Table 4.8)

4.4.2 Factor analysis

Table 4.8: Total Variance Explained

Compon ent	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.200	27 494	27.494	2.200	27 494	27.494
2	1.831	22.893	50.388	1 831	22.893	50.388
3	1.313	16.414	66.802	1.313	16.414	66 802
4	868	10.855	77.657			
5	629	7 867	85.524			
6	.515	6.435	91.960			
7	361	4.507	96.467			
8	.283	3.533	100.000			

Extraction Method: Principal Component Analysis.

From the table, and through application of Principal Component Analysis, three components were extracted. The initial Eigen values showed that the first factor explained 27.5% of the variance, the second factor 22.9% of the variance, and a third factor 16.4% of the variance. The fourth, fifth, sixth, seventh and eight factors had Eigen values of below one.

Table 4.9: Component Matrix"

	Component		
	1	2	3
Legislation and financial supervision)	.163	-.179	.706
New Technology)	-.079	.775	.261
Demand for financial services & clients ability to use innovation)	.205	.709	-.066
Size of financial institution)	.683	-.424	.248
Macroeconomic conditions e.g. interest rates, inflation)	.515	.375	-.617
Competition in financial service markets)	.864	-.210	-.029
Increase in financial risk)	.796	.205	.039
Cost reduction)	.111	.538	.546

Extraction Method: Principal Component Analysis,

a 3 components extracted

.As one good rule of thumb for determining the number of factors, is the "Eigen value greater than 1" criteria, the study considered the first three factors as they had Eigen values > 1. and the final factor solution represented 66.8% of the variance in the data. The *loadings* listed under the "Factor" headings represent a correlation between that item and the overall factor.

Thus. Legislation and financial supervision new technology and demand for financial services & clients ability to use innovation are the major determinants of financial innovation in MFIs in Kenya as they explained 66.8% of the variance.

4.5 The Relationship between Financial Innovation and MFI Performance

Table 4.10: Benefits derived from the Financial Innovation

Benefit	1	2	3	4	Mean	STDEV
Improved customer service	0	1	9	29	3.72	.510
Reduction in operational costs	0	6	18	15	3.23	.706
Reduced number of customers in banking halls	11	8	14	6	2.38	1.067
Faster and deeper expanded financial services outreach	0	4	19	16	3.31	.655
Increase in market share	1	6	14	18	3.26	.818
Increased institutions revenue	3	5	17	14	3.08	.900

Source: Research data (2011)

(Key 1= least beneficial 2= slightly beneficial 3= moderately beneficial 4= most beneficial)

The respondents were asked to indicate the extent to which the predetermined factors best explain the benefits derived from financial innovation. The findings as shown in the table indicated that improved customer service, faster and deeper expanded financial services outreach, increase in market share, reduction in operational costs, and increased institutions revenue are the major benefits derived from the financial innovation in MFIs in Kenya. The resulting benefits indicate that financial innovation has great impact on financial performance of microfinance institutions in Kenya. This is evidenced by improved customer service, reduction in operational costs, expanded financial outreach and access, increased market share, reduction of customers in banking halls and the increased revenue base of the Microfinance institutions.

Table 4.11: Various innovations and their effects

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	STDEV
Use of ATMs in the branches has increased	8	8	3	10	10	3.15	1.531
The No. of electronic funds transfer transactions has increased	1	1	13	12	12	3.85	.988
No. of customers using debit/credit cards has increased	2	7	6	21	3	3.41	1.044
Gender oriented accounts has increased	4	10	13	11	1	2.87	1.031
The business volume has improved both in customer base as well as savings mobilization	2	10	5	18	4	3.31	1.127
The number of transactions per day increased	2	5	6	19	7	3.62	1.091

Source: Research data (2011)

From the table, the number of electronic funds transfer transactions has increased had a mean score of 3.85 and a standard deviation of .988, increased number of transactions per day (M 3.62, SD 1.091), increased number of customers using debit/credit cards (M3.41, SD1.044), improved business volume in both customer base as well as savings mobilization (M 3.31, SD 1.127), increased use of ATMs in the branches (M 3.15, SD 1.531) and increased gender oriented accounts (M2.87,SD 1.031). These findings depict that there has been an increase in number of electronic funds transfer transactions, number of transactions per day, number of customers using debit/credit cards, and improved business volume in both customer base as well as savings mobilization as a result of financial innovation in MFIs in Kenya. The growth in the above factors shows that financial innovation influences financial performance of Microfinance institutions in Kenya. The use of electronic funds transfer and the number of transactions" per day had greatly increased while use of ATMs, use of credit cards, gender oriented accounts and savings mobilization had moderately increased.

Table 4.12: Return on Assets

The table indicates the financial performance of various Microfinance institutions in the last six years. The return on assets was regressed against various areas of financial innovation to determine the relationship between financial innovation and performance.

Name	2005	2006	2007	2008	2009	2010
ECLOF - KEN	–	–	–	-7.92%	3.42%	1.38%
Equity Bank	3.73%	4.69%	5.01%	5.91%	5.23%	6.43%
Faulu - KEN	0.65%	5.96%	2.29%	-1.11%	-1.76%	-3.38%
K-Rep	0.99%	2.20%	2.10%	-4.69%	-2.72%	0.68%
K^DET	-5.84%	-6.41%	-21.15%	-23.74%	-9.41%	–
KEEF	-17.99%	-17.71%	55.86%	14.31%	–	–
KPOSB	1.02%	1.15%	1.15%	0.44%	-4.21%	–
KWFT	3.47%	4.23%	5.03%	6.84%	5.24%	1.60%
Micro Kenya	–	–	1.38%	59.98%	-0.93%	4.02%
Opportunity Kenya	–	–	-23.40%	-33.15%	-18.14%	-12.48%
PAWDEP	9.00%	7.53%	2.52%	1.43%	0.24%	–
SMEP	2.14%	0.53%	0.68%	0.39%	1.01%	–
Co-operative bank		2%	2%	3%	3%	3%

Source: The MIX Market: http://www.mixmarket.ora/social-performance-data

4.6 Correlation Analysis of The Determinants Of Financial Innovation

The Pearson product-moment correlation coefficient (or Pearson correlation coefficient for short) is a measure of the strength of a linear association between two variables and is denoted by r. The Pearson correlation coefficient, r, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases. From the table 4.13, all the predictor variables were shown to have a positive association between them at a significant level of 0.05 and hence included in the analysis; with the strongest (0.97699) being indicated between legislation and financial supervision and Cost reduction. A moderate positive relationship was found between legislation and markets conditions (0.51997), Economic conditions and Cost reduction (0.57587). A weakest relationship (0.00042) occurred between competition in financial service markets and Increase in financial risk

Table 4.13: Correlation coefficient

	XI	X2	X3	X4	X5	X6	X7	X8
XI	1							
X2	0.77743	1						
X3	0.88149	0.04545	1					
X4	0.23832	0.10036	0.39563	1				
X5	0.12490	0.40507	0.05997	0.78226	1			
X6	0.51997	0.29416	0.86345	0. 464	0.051168	1		
X7	0.40827	0.70842	0.20716	0.05870	0.01312	0.00042	1	
X8	0.97699	0.01385	0.15148	0.69346	0.57587	0.87537	0.2824	1

Where; Xl= Legislation, X2= Technology, X3 =Demand for financia services, X4= Size of institution. X5= Economic conditions, X6= markets conditions, X7= Financial risk, X8 =Cost reduction

Table 4.14: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	403[a]	.163	-.061	42127

    a   *Predictors:* (Constant), Cost reduction, Legislation, markets condition , Demand for financial
           services, Technology , Economic conditions, financial risk, Size of institution

    b.   Dependent Variable, financial innovation

Analysis in table above shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) $R2$ equals 0.163. that is, Cost reduction, Legislation, markets condition, demand for financial services, Technology , Economic conditions, financial risk, Size of institution explain 16.3 percent of the variance in financial innovation.

Table 4.15: ANOVA (Analysis of Variance) -used to check how well the model fits the data

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.035	8	.129	.729	000[a]
Residual	5.324	30	.177		
Total	6.359	38			

    a   Predictors (Constant). Cost reduction. Legislation, markets condition , Demand for financial services,
         Technology , Economic conditions, financial risk. Size of institution

    b   Dependent Variable: financial Innovation

The F statistic is the regression mean square (MSR) divided by the residual mean square (MSE). Since the significance value of the F statistic is small (0.000 smaller than say 0.05) then the predictors variables Cost reduction, Legislation, markets condition , Demand for financial services, Technology , Economic conditions, financial risk. Size of institution explain the variation in the dependent variable which is financial innovation. Consequently, we accept the Hypothesis that all the population values for the regression coefficients are not 0.

Otherwise if the significance value of F was larger than 0.05 then the independent variables would not explain the variation in the dependent variable, and the null hypothesis that all the population values for the regression coefficients are 0 should have been accepted.

Table 4.16: Regression Coefficients results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.881	.572		1.539	.134
Legislation	.097	.065	.275	1.488	.147
New Technology	.025	.086	.059	0.293	.772
Financial services	.095	.099	.180	0.952	.349
Size of financial institution	-.010	.080	-.029	-0.126	.900
Economic conditions	.052	.087	.128	0.600	.553
Markets condition	-.079	.100	-.194	-0.788	.437
Financial risk	-.011	.084	-.029	-0.133	.895
Cost reduction	-.082	.095	-.171	-0.858	.398
a Dependent Variable: Financial innovation					

From the table all the coefficients were not statistically significantly different from zero. Thus we conclude that the variables are jointly statistically insignificant at significance level 0.05. Since all independent variables were correlated, (multicollinearity), the coefficients on individual variables may be insignificant when the regression as a whole is significant. Intuitively, this is because highly correlated independent variables are explaining the same part of the variation in

the dependent variable, so their explanatory power and the significance of their coefficients is divided up" between them (Fox, 2004).

Regression equation

The unstandardized (B) coefficients are the coefficients of the estimated regression model. In this result the regression equation can be written as follows

$Z=0.881+ ,097X| + .025X2 + 095X3 -.OIOX4 + .052xs-.079x6-.01 1X_7-.082X_8$

Where

Constant =0.881, Legislation, markets condition. Demand for financial services, Technology, Economic conditions, financial risk, Size of institution =0, then financial innovation would be 0 **.881**

X_i= 0.097. shows that one unit change in Legislation results in 0.097 units increase in financial innovation.

X_2= .025. shows that one unit change in technology results in .025 units increase in financial innovation.

X_3= .095. shows that one unit change in demand for financial services results in .095 units increase in financial innovation.

X4= -.010, shows that one unit change in Size of financial institution results in .010 units decrease financial innovation .

X5= .052 shows that one unit change economic conditions results in .052 increase in financial innovation

X6= -.079 shows that one unit change Markets condition results in .079 decrease financial innovation

X7= -.011 shows that one unit change in Financial risk results in .011 decrease financial innovation

X8= -.082 shows that one unit change in cost reduction results in. 082 decrease financial innovation

From the findings, it can be concluded that legislation, technology, demand for financial services and clients ability to use innovation, economic conditions are positively associated with financial innovation while Size of financial institution, markets condition and financial risk are negatively associated with financial innovation. The t statistics helps us in determining the relative

importance of each variable in the model. As a guide regarding useful predictors, we look for t values well below -0.5 or above +0.5. In this case Legislation, Financial services, Economic conditions. Markets condition and Cost reduction have the greatest importance in influencing financial innovation while Size of financial institution, markets condition and financial risk have moderate influence.

4.7 Regression Analysis for the Influence of Financial Innovation on Financial Performance

In this part, financial performance (determined by Return on Asset -ROA) was regressed against the various areas of innovation (Institutional innovation, new technology, new products/services, and new processes. The results are presented in the following tables;

Table 4.17: Model Summary

Model	**R**	R Square	Adjusted R Square	Std. Error of the Estimate
1	,210[a]	.044	-.068	.86085

a. Predictors: (Constant), Institutional innovation, New technology, New products/services, New processes

In this case, the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) R^2 equals 0.044, that is, Institutional innovation, New technology. New products/services. New processes explain 4.4 percent of the variance in financial performance.

Table 4.18 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.163	4	.291	.392	.00813[a]
	Residual	25.196	34	.741		
	Total	26.359	38			

a Predictors: (Constant), Areas innovation(Institutional innovation, Areas innovation(New technology, Areas innovation(New products/services, Areas innovation(New processes

b Dependent Variable: ROA

In **this case,** the significance value of the F statistic is 0.00813 indicating that all the predictor **variables** institutional innovation, new technology, new products/services, new processes explain **variation in** financial performance.

fable 4.19: Regression Coefficients results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.007	.619		3.243	.003
New products/services	.040	.393	.020	.101	.920
New processes	.070	.401	.042	.175	.862
New technology	.448	.372	.220	1.207	.236
Institutional innovation	.116	.361	.070	.321	.750

a   Dependent Variable: ROA

4.7.1 Regression equation

In this result the regression equation can be written as follows;

$Y = 2.007 + 0.040X_1 + 0.070X_2 + 0.448X_3 + 0.116X_4$

Where

Constant = 2.007. If new products/services, New processes. New technology Institutional innovation =0. then financial performance would be 2.007

$X_i = 0.040$. shows that one unit change in New products/services results in 0.040 units increase in financial performance.

$X_2 = 0.070$, shows that one unit change in new processes results in .070 units increase in financial performance.

$X_3 = 0.448$, shows that one unit change in new technology results in 0.448 units increase in financial performance.

$X_t = 0.116$, shows that one unit change in Institutional innovation results in 0.116 units increase in financial performance   .

From the findings, it can be concluded that new products/services, new processes, institutional innovation and new technology are positively associated with financial performance in MFIs in Kenya.

4.8 Summary

From the findings, legislation, technology, demand for financial services, economic conditions were found to be positively associated with financial innovation while size of financial institution, markets condition and financial risk are negatively associated with financial innovation. In addition, Legislation, demand for financial services, Economic conditions, Markets condition and Cost reduction were found to have the greatest importance in influencing financial innovation.

From the regression analysis for the influence of financial innovation on financial performance, institutional innovation, new technology, new products/services, and new processes explained 4.4 percent of the variance in financial performance. Based on the coefficient of regression, new products/services, new processes, new technology and institutional innovation were found to be positively associated with financial performance in MFIs in Kenya.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of findings as discussed in the previous chapter. From the findings, conclusions and recommendations are discussed based on the objectives of the study mainly the determinants of financial innovation and its effect on financial performance in Microfinance institutions in Kenya. This study tries to shed additional light on the relationship between innovation and performance in MFI's in Kenya.

5.2 Summary of findings

From the findings, internally generated funds are the major source of fund for the MFIs while customer deposits, foreign donors/grants, and borrowings/loans are moderately utilized in financing MFIs. In terms of overall turnover per annum, the findings indicated that there is high growth in the number of borrowers, amount of loans disbursed and the number of customers, while there is relatively low growth in the of employees for MFIs in Nairobi.

The findings also noted that, new products, services, new technology and new processes are the major areas of innovation for the MFIs in Kenya in the last 6 years, while for those that had undertaken financial innovation; they had done it in the last 7-12 months. Further. Mobile banking, personal loans, savings mobilization and credit services were found to be the most adopted innovations by MFIs in Kenya while ATM services, telephone banking, private banking, youth oriented accounts, women related accounts, children related accounts , small businesses accounts, credit cards, house mortgages and asset financing were least adopted between year 2005-2010. In addition new services, new products and changes in business processes were found to be the most important financial innovation trends in the MFIs.   r

From the findings, n ew technology, macroeconomic condition s e.g. interest rates, inflation, demand for financial services and clients ability to use innovation, cost reduction and increase in financial risk greatly influence financial innovation in MFIs in Kenya, while competition in financial service markets, size of financial institution and legislation and financial supervision have moderate influence. The findings on the benefits derived from the financial innovation,

indicated that improved customer service, faster and deeper expanded financial services outreach, increase in market share, reduction in operational costs, and increased institutions revenue are the major ones derived from the financial innovation in MFIs in Kenya.

The findings on the effects of various innovations, depicted that there has been increase in the number of electronic funds transfer transactions, number of transactions per day, number of customers using debit/credit cards, and improved business volume in both customer base as well as savings mobilization as a result of financial innovation in MFIs in Kenya.

From the correlation results at a significant level of 0.05, legislation/ financial supervision and Cost reduction were shown to have the strongest positive association while competition in financial service markets and increase in financial risk had the weakest.

From the regression analysis on the determinants of financial innovation, legislation, technology, demand for financial services, economic conditions were found to be positively associated with financial innovation while size of financial institution, markets condition and financial risk are negatively associated with financial innovation. In addition, Legislation, demand for financial services. Economic conditions. Markets condition and Cost reduction were found to have the greatest importance in influencing financial innovation.

From the regression analysis for the influence of financial innovation on financial performance, institutional innovation, new technology, new products/services, and new processes explained 4.4 percent of the variance in financial performance. Based on the coefficient of regression, new products/services, new processes, new technology and institutional innovation were found to be positively associated with financial performance in MFIs in Kenya.

5.3 Conclusions

From the findings the study concluded that new products/services, new technology and new processes are the major areas of innovation for the MFIs in Kenya. Further, Mobile banking, personal loans, savings mobilization and credit services were the most adopted innovations, while ATM services, telephone banking, private banking, youth oriented accounts, women related accounts, children related accounts , small businesses accounts, credit cards, house mortgages and asset financing were least adopted between year 2005-2010. In addition new

services, new products and changes in business processes a re the most important financial innovation trends in the MFIs. In conclusion new technology, macroeconomic conditions e.g. interest rates, inflation, demand for financial services and clients ability to use innovation, cost reduction and increase in financial risk greatly influence financial innovation in MFIs in Kenya, while competition in financial service markets, size of financial institution and legislation and financial supervision have moderate influence.

In conclusion, legislation, technology, financial services, economic conditions are positively associated with financial innovation while size of financial institution, markets condition and financial risk are negatively associated with financial innovation.

In addition, new products/services, new processes, new technology and institutional innovation are positively associated with financial performance in MFIs in Kenya.

5.4 Limitations of the study

The study was limited to microfinance institutions within Nairobi due to resource constraints in terms of time and money hence may not give more representative results and their potential bias in the results. Some respondents were not easily available to respond to the questionnaire and hence needed a lot of time to keep checking on the progress.

5.5 Recommendations and Suggestions for further Research

The study recommends setting up of policies that promote conducive environment for the MFIs in Kenya. In Kenya, the Microfinance Act (2006) is in place and it clearly defines the roles to be played by the Government, The Central Bank of Kenya and the microfinance institutions. However close supervision and monitoring of the microfinance sector is needed for quality growth and broadening of financial access and deepening financial inclusion. More funding bases are required, and leaders with vision and managerial capacity are required to help the microfinance institutions to forge ahead. MFIs should adopt products and services, processes, new technology, as well as institutional innovation as they positively influence financial performance. In addition proper strategies need to be adopted during introduction of a new technology to the market in order to enhance financial performance. This research was based on 39 MFIs that are registered with the Association of Microfinance Institutions and are operating

within Nairobi. Further research should be conducted widely across the microfinance institutions in the country to give more representative results and to reduce any potential bias in the results.

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APPENDIX 1: COVER LETTER

COVER LETTER

University of Nairobi

School of business

Department of accounts and finance

P.O Box 30197 NAIROBI

Dear respondent

Re: Search for research data

I am a final year student at University of Nairobi pursuing studies for the degree of Master of Business Administration (finance option). As part of the requirements of the degree. I am required to carry out research in an approved research topic and present my findings to the faculty board for approval. My topic of study is "Determinants of Financial innovation and its impact on financial performance of micro finance institutions in Kenya".

I hereby enclose a questionnaire for your kind attention. The findings of the research are to be used for academic purposes only. All information provided will be kept confidential.

Thank you in advance as you fill-in your honest responses

J.Mikwa

APPENDIX II: QUESTIONNAIRE

Personal information of respondent

Name (optional)

Position in the organization

Company information

Name of MFI/bank

Part 1- Information about the organization (Demographic data)-Please tick

   I. Ownership
        a) Government related
        b) Privately owned/individuals
        c) NGO's
        d) Co-operatively owned
        e) Church
        0 Other(Kindly elaborate on this ownership)

   2. Source of funds
        a) Foreign donors/grants
        b) Internally generated funds
        c) Customer deposits
        d) Borrowings/loans

   3. Using the categories below indicate for how long your organization has been in operation in Kenya

Less than 5 yrs	6-10	11-15	16-20	Over 20 years

   4. Using the categories below and the period indicate the number of branches in Kenya

	Number of branches			
Year	Less than 5	6-10	11-20	Over 20
2005-2006				
2007-2008				
2009-2010				

5. Overall Turnover per annum in relation to the following

	Very large extent	large extent	Moderate extent	Small extent	No change
No. of employees					
No. of customers					
Amount of loans disbursed					
No. of borrowers					

Part 2: Financial innovation

6. In which areas has your institution undertaken innovation in the last 6 years
    a) New products/services
    b) New processes
    c) New technology
    d) Institutional innovation

7. When is the last time your institution undertook financial innovation

1-6 months	7-12 months	13-18months	19-24months	25-30 months	Not recently

8. Using **(V)** please indicate the category of innovation and the years in which you introduced it

		Year of introduction		
	Category	2005-2006	2007-2008	2009-2010
1	Mobile banking			
2	Agency banking			
3	Branchless banking			
4	ATM services			
5	Telephone banking			
6	Information technology			
7	Private banking			
8	Youth oriented accounts			
9	Women related accounts			
10	Children related accounts			

11	Small businesses accounts			
12	Credit cards			
13	House mortgages			
14	Personal loans			
15	Micro-insurance			
16	Savings mobilization and credit services			
17	Asset financing			

9. Estimate the importance of different financial innovation trends in MFIs on a scale of 1 to 5, (where. 1. Very important 2. Important 3. Moderately important 4. Slightly important 5. Not important)

Financial innovation	Importance				
	1	2	3	4	5
New services					
New products					
Changes in business processes					
Institutional changes					

Part 3: Determinants of financial innovations

10. In a scale of 1-5 (1. not at all, 2. Small extent, 3. Moderate extent, 4. Great extent, 5. Very great extent), indicate by using (V) the extent to which the different factors influence financial innovation in your institution

		Rating				
	Influencing factor	1	2	3	4	5
1	Legislation and financial supervision					
2	New Technology					
3	Demand for financial services & clients ability to use innovation					
4	Size of financial institution					
5	Macroeconomic conditions e.g. interest rates, inflation					
6	Competition in financial service markets					
7	Increase in financial risk					
8	Cost reduction					

Part 4: Measuring the success of financial innovation by MFIs (performance)

11. On a scale of 1 to 4 indicate the extent to which each of the following factors best explains the benefits derived from the financial innovation, where (1. least beneficial 2. Slightly beneficial 3. Moderately beneficial 4. Most beneficial)

Benefit	Ranking			
	1.(least beneficial)	2. (slightly beneficial)	3. (moderately beneficial	4. (Most beneficial
Improved customer service				
Reduction in operational costs				
Reduced number of customers in banking halls				
Faster and deeper expanded financial services outreach				
Increase in market share				
Increased institutions revenue				
All the above				

12. On a scale of 1-5 (where, 1. Strongly agree 2. Agree 3. Neutral 4. Disagree 5. Strongly disagree)

To what extent do you agree with the following statements on various innovations and its effects?

	1	2	3	4	5
Use of ATMs in the branches has increased					
The No. of electronic funds transfer transactions has increased					
No. of customers using debit/credit cards has increased					
Gender oriented accounts has increased					
The business volume has improved both in customer base as well as savings mobilization					
The number of transactions per day increased					

APPENDIX III - MICROFINANCE INSTITUTIONS IN KENYA

1. AAR Credit Services
2. ADOKTIMO
3. Agakhan First Microfinance Agency
4. Barclays Bank of Kenya Ltd
5. Biashara Factors Limited
6. BIMAS
7. Blue Limited
8. Canyon Rural Credit Limited
9. Chartis Insurance
10. CIC Insurance
11. Co-operative Bank
12. ECLOF Kenya
13. Elite Microfinance
14. Equity Bank
15. Faulu Kenya DTM Limited
16. Fusion Capital Ltd
17. Greenland Fedha Limited
18. Jamii Bora Bank
19. Jitegemea Credit Scheme
20. Jitegemee Trust Limited
21. Juhudi Kilimo Company Limited
22. K-rep Bank Ltd
23. K-rep Development Agency
24. KADET
25. Kenya Entrepreneur Empowerment Foundation
26. Kenya Post Office Savings Bank
27. Kenya Women Finance Trust
28. Kenya Women Holding
29. Kilimo Faida
30. Mega Microfinance Limited
31. MESPT
32. Micro Africa Limited
33. Microensure Advisory Services
34. Molyn Credit Limited
35. Muramati SACCO Society Ltd
36. Oikocredit
37. One Africa Capital Limited
38. Opportunity International
39. Pamoja Women Development Programme (PAWDEP)
40. Rafiki Deposit Taking Microfinance Ltd
41. Remu DTM Limited
42. Renewable Energy Technology Assistance
43. Rupia Limited
44. Select Management Services Limited
45. SISDO
46. SMEP DTM Limited
47. Swiss Contact
48. Taifa Option Microfinance
49. L) & I Microfinance Limited
50. Uwezo DTM Limited
51. Yeliu Microfinance Trust
52. Youth Initiatives - Kenya (YIK)

Source: Association of Microfinance Institutions of Kenya-2010