

**EFFECTS OF FINANCIAL INNOVATION ON FINANCIAL
PERFORMANCE OF MFI'S IN KENYA**

BY

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DECLARATION

I undersigned declare that this is my original work and has not been submitted to any other College or University.

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

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DEDICATION

This research is dedicated to my family who gave me unwavering support while undertaking the research project right from the start of the journey

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LIST OF ABBREVIATIONS

- ATM ... Automated Teller Machine
- AMFI ... Association of Micro Finance Institutions
- CBK..... Central Bank of Kenya
- EUR.... Euro
- GDP.... Gross Domestic Product
- KM ... Knowledge Management
- NGO ... Non Governmental Organization
- MFI ... Micro Finance Institutions
- DTM.....Deposit Taking Microfinance
- DTMFI ... Deposit Taking Micro Finance Institutions
- NSE ... Nairobi Securities Exchange
- SME... Small and Medium Enterprises
- ROA ... Return on Assets
- ROE... Return on Equity
- RMs ... Relationship Managers
- U.S.A United States of America
- UON ... University of Nairobi
- WCM ... Working Capital Management

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ABSTRACT

Diversification provides a stable and less volatile income, economies of scope and scale, and the ability to leverage managerial efficiency across products. As a result of financial innovation, the economies of scale and scope caused through the joint production of financial activities led to increased efficiency of Financial Institutions. Many studies have done on financial performance of microfinance institutions, but none of them have focused on effects of financial innovation on their financial performance. The objective of this study is to determine effects of financial innovation on financial performance of Microfinance Institutions. A descriptive research design was adopted for the purposes of this study. The study was based on 12 registered and licensed DTMFIs in Kenya. The researcher gathered a 7-year (2008-2014) secondary data from the Association of Microfinance Institutions (AMFI), Central Bank of Kenya (CBK) and published newspapers (interest income and non-interest income), and the DTMFIs' websites (A ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas). The study focused on dependent and independent relationship, and a multiple regression analysis was conducted to determine the relationship of three dependent variables, which included interest income, noninterest income, and a ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas; and dependent variable, which is financial performance (measured by ROE). The regression analysis established that the three independent variables have a positive correlation with the dependent variable. Interest income, noninterest income, and a ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas were found to have positive influence on financial performance. The ANOVA analysis was meant to determine whether the variation in the independent variables explains the observed variance in the outcome, that is, financial performance, as used in the study. ANOVA findings in this study revealed that there was correlation between the predictor variables interest income, noninterest income, and a ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas and response variable (financial performance) since P- value of 0.040 is less than 0.05, which is an indication of a positive relationship between the variables used in this study.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Financial innovation can be defined as the act of creating and then popularizing new financial instruments as well as new financial technologies, institutions and markets (Tufano, 2002). The developments in the financial sector have not only led to the increase in the number of financial institutions, but also the development in level of sophistication with new payment systems and asset alternatives to holding money. This has resulted mainly from technological advancement and increase in competition as the number of institutions increase. The effects of financial innovation and financial performance remains a controversial one in both theory and empirical findings with positive, negative and even no relationship between the two being exemplified. Earlier studies showed mix results about the relationship between income source diversification and financial performance. Lepetit et al. (2008) also documented increased non interest income resulting in higher bank risk. By exploiting detailed income data, they concluded that increased risk is due to commission and fee activities for small banks rather than trading activity.

In Kenya, there has been a fluctuation of the interest rates since year 2011 and this has led to people taking lesser credit and more defaulting in loans. This is according to the central bank of Kenya. Financial institutions, which primarily depend on interest income for their operations, have in that sense reduced their dependence on the interest income by diversification. They have focused on other non interest income. The Micro finance institutions have not been left behind on this. Kenya being a developing economy, it has many micro finance institutions and they have also been affected by the interest rates vitality (Ndulu, 2010).

Financial innovation has led to income source diversification therefore Deposit Taking Micro Finance Institutions have shifted their income sources into non-intermediation income generating activities as opposed to the traditional inter-mediation income generating activities. DTMFI have shifted their sales mix by diversifying in income sources. There are two main sources of income; interest income and non-interest income. Non-interest income components include fees and commissions on loans and advances, other fees and commissions, foreign exchange trading

income, dividend income and other non-interest income. Non-interest income increase bank franchise value and banks with higher non-interest income have higher market betas (Baele et al., 2007). Financial performance is a measure of how sound financial health of a DTMFI is and how is a guarantee to its depositors, shareholders, employees and the economy at large. Due to this fact, efforts have been made from time to time, to measure the financial position of each MFI and manage it efficiently and effectively (Batiz-Lazo and Woldesenbet, 2006).

1.1.1 Financial Innovation

The term financial innovation has been used in a variety of content to refer to a wide range of changes and developments affecting financial markets (Tufano, 2002). In a narrow sense, the term can be used to refer solely to the introduction of new financial instruments. In a broader sense, it can encapsulate changes in the structure and depth of financial markets, in the role of financial institutions, the methods by which financial services are provided and the introduction of products and procedures in the wake of deregulation. This research project attempts to find out the effect of financial innovation of Micro Finance Institutions in Kenya during the financial period 2008– 2014 on financial performance. If MFI's diversify their income generating activities, the problem of profitability and stiff competition in the industry will ease, hence improving financial performance.

Diversification is a portfolio strategy designed to reduce risk by combining various investments. Diversification benefitted from shifting into non-interest income in bank's revenue and reduced volatility of bank profits (Stiroh, 2004a). In finance and investment planning, diversification improved cost efficiency through lower risk from diversification if it occurred; it lowered the required risk premiums on un-insured debt (Moon, 1996).

Financial institutions have been increasingly generating income from "off-balance sheet" business and fee income. Albertazzi and Gambacorta (2006) as cited by Uzhegova (2010) noted that decline in interest margins, had forced banks to explore alternative sources of revenues, leading to innovation into trading activities, other services and non-traditional financial operations. The concept of revenue diversifications followed the concept of portfolio theory which states that individuals can reduce firm-specific risk by diversifying their portfolios. In a study of 43 nations, Laeven and Levine (2007) found that diversified financial conglomerates are

less valuable than specialized financial institutions, indicating that diversification across lending and non-lending activities did not add value and was likely to increase agency costs. The recent evidence concluded that non-interest income did not improve bank income risk-return characteristics, except in Europe. This is an important conclusion as De Young and Rice (2004) find that non-interest income has grown in banking in the United States to contribute close to half of bank income. Further, large banks were more reliant upon non-interest income than small banks, with the associated implications for systemic stability. They further found that 1 percent of all banks generate about 18 percent of all non interest income in the United States.

Finally, non interest income did not require high levels of fixed assets and thus had a lower level of required capital (particularly for activities like fund management and trust services), unlike lending activity, and hence had higher financial leverage resulting in higher risk. The recent global financial crisis of 2007/2009 demonstrated the importance of bank performance both in national and international economies and the need to keep it under surveillance at all times. Arun and Turner (2004) argued that the importance of financial institutions was more pronounced in developing countries because financial markets were usually underdeveloped, and banks were typically the only major source of finance for the majority of firms and were usually the main depository of economic savings (Athanasoglou et al., 2006).

Modern examples of process of innovations include the SWIFT (Society for Worldwide Interbank Financial Transfers) network for foreign exchange payments, the grey market (or premarket) in Eurobond trading, the Euro-clear and Cede1 systems for clearing Eurobonds and the establishment of formal linkages and dual listings between U.S. and foreign stock and commodity exchanges. The European Monetary System (EMS) might be viewed as a process innovation intended to stabilize European exchange rates, for instance, increased use of paper money instead of cash. Cheques are the main paper based mode of payment accounting for 48% of non-cash payments. Use of Magnetic Ink Character Recognition (MICR) ensures clearing of cheques speedily and efficiently. The Central Bank of Kenya launched a Real Time Gross Settlement (RTGS) system known as the Kenya Electronic Payments and Settlement System (KEPSS) in July 2005 in an effort to modernize the country's payment system in line with global trends (Oloo, 2007). Other financial innovations include mobile banking and internet banking.

1.1.2 Financial Performance

Performance is defined as meeting a goal (Boru, 2011). It is the accomplishment of a given task measured against present known standards. Its measure is used to evaluate the relative success of a firm. There have been various methods of measuring the performance of a firm as explained by Block and Hirt (1992). There are those that measure profitability, others liquidity, asset utilization and debt utilization. It's very important to keep evaluating performance to make sure that the institution remains viable and achieves both short term and long term goals.

There are many recorded drivers of performance of financial institutions. Harker and Zenios (1998) list the following as the main drivers. One of them is strategy. Strategy is a key driver for success. Strategy should be in the areas of product mix, client mix, geographical locations and distribution channels. Other drivers are flexibility and responsiveness in operations, ability to understand time based competition in response to customers' needs, diversification and organizational efficiency. They also list some environmental drivers of performance which are innovation, regulation and technology. Innovation enables a firm to produce new products, produce former products but more efficiently among others. Regulation prevents unfair competition for firms hence enhancing performance. Technology as a driver of performance enables efficient production, new product production among others.

1.1.3 Financial Innovation and Financial Performance

This has been an area of much debate on the effects of financial innovation but what is agreed is that product diversification has an effect on financial performance. One argument is that diversification has no significant impact on performance though it has an impact on risk adjusted performance (Chang and Elyasiani, 2008). Another view is that diversification has had significant effect on performance of financial institutions especially during economic crisis (Kuppuswamy and Villalonga, 2010). Among the effects on performance is that it increases efficiency (Rotich, 2011).

1.1.4 Micro Finance Institutions in Kenya

The Microfinance Act, 2006 and the Microfinance Regulations 2008 issued the legal, regulatory and supervisory framework for the microfinance industry in Kenya. The Microfinance Act

became operational with effect from 2nd May 2008. The principal object of the Microfinance Act is to regulate the establishment, business and operations of microfinance institutions in Kenya through licensing and supervision. The Act enables Deposit Taking Microfinance Institutions licensed by the Central Bank of Kenya to mobilize savings from the general public, thus promoting competition, efficiency and access. In 2003 the world Bank estimated that approximately 1 billion people live on less than one dollar per day and out of about 3 billion only about 300m poor people are considered suitable for microfinance services. The main ultimate goal of microfinance therefore is to give low income people an opportunity to become self reliant and sufficient by providing a means of micro saving borrowing money and insurance.

Microfinance is not a new concept. Small micro credit operations have existed since the mid 17th century. However, most modern micro financial institutions operate in developing countries. The advent of what is now called modern microfinance is dated to the 1970s when related lending programs were first proven to pass two key tests: to show that poor people can be relied on to pay their loans and to show that it is possible to provide financial services to poor people through market based enterprises (Otero, 2006). Historically, the main goal of microfinance was the alleviation of poverty. Alleviation of poverty was the primary social objective and so traditional microfinance institutions consisted of only of nongovernmental organizations, specialized microfinance banks and public sector banks. In developing countries it is worth noting that in the recent times the market place has been evolving such that the traditional microfinance institutions have and are transforming themselves into profit seeking institutions. The argument attributed to this is that they want to achieve greater strength, sustainability and market rich. Most microfinance institutions consider alleviation of poverty their primary goal, experimenting with new techniques and strategies to raise more incomes and create jobs in order to sell more products to more consumers is also a motivation to many new entrants. Microfinance appeared hundreds of years ago in rural and poor communities to offset the lack of savings and credit institutions and avoid expensive money lenders.

Microfinance has been around in most developing countries for over 30 years providing small scale financial services to poor rural and urban communities. However the concept has gained a lot of popularity recently with the award of the 2006 Nobel Peace Prize to professor Muhammad

Yunus with his Grameen Bank. Professor Muhammad Yunus, after realizing the dire need of microcredit by the poor in Bangladesh, initiated a savings programme from where the poor would access microfinance. In the last few years a number of major institutions, investors and NGOs have plunged into this sector. The driving force has been and continues to be increased awareness of social responsibility and interest in sustainability, development and the belief that lasting peace cannot be achieved unless the large population find ways in which to break out of poverty.

In the face of ever changing world, microfinance is seen as a highly potential tool to alleviate poverty. In the 1970s and 1980s the provision of savings and credit services were seen as key instruments for economic empowerment of disadvantaged people. In Kenya microfinance was not seen as an organized way of offering grants rather to stimulate entrepreneurial activity. If free financial provisions are given entrepreneurial activity and efficiency is never stimulated. Free financial provisions undermine the development of a healthy financial infrastructure and local economy. With the provision of credit, micro enterprises will always grow and transform into small and medium sized ventures hence empower communities in which the enterprises are operating.

The banking sector plays a very important role in the economy by facilitating the flow of money from depositors to borrowers. Licensing of financial institutions in Kenya is done by the Cabinet Secretary in the Finance docket through CBK. Ideally, financial reforms and free market should spur the adoption of innovations that improve efficiency and provide a healthy balance between lending and deposit rates (Banking Act Cap 488).

MFI business is on the increase in Kenya and better regulated (Ndulu, 2010). But there are factors that affect the transformation of MFIs. This includes governance and ownership challenges. This occurs because the MFIs are transmitting from ownerless to owned and getting people who are willing to invest is a challenge. Another challenge would be the transition process to a limited liability company which comes with stiffer regulations. The capital challenge cannot go unnoticed since the basic minimum capital is 60 million for national wide DTM and 20 million for a community based DTM. Strong leadership is required and also staff must be

involved in the transition process sometimes it requires staff upgrade. Acquiring management information system is expensive.

1.2 Research Problem

Financial liberalization of early 1990s in Kenya exposed the banking industry to many players in the industry hence leading to stiff competition and weakening of financial performance of many MFI's as well as collapse of others. In order to mitigate this competition and improve on financial performance, MFI's have examined the adoption of product, process and institutional innovations in their income sources.

In recent decades, financial sectors of many countries have undergone significant changes against the background of general trend towards deregulation, globalization, and development of the internet and the resulting explosion of e-commerce. Technological innovation and falling costs in computing and telecommunications, have especially aided growth of the most recent innovations in payments — electronic payments (e-payments). Developments in technology and telecommunication have brought about these changes. The spread of the financial innovations vary unevenly between countries, partly due to differences in factors such as regulatory frameworks and readiness of telecommunication infrastructure. For instance, while payment services based on the internet and mobile phones are prolific in the advanced economies, in some of the emerging and low-income economies, the pace and development of e-payments appears slow and uneven.

In case there was no financial innovation for example no ATM this would lead to low consumption pattern leading to a low production, thus reducing economic inefficiency. Standard innovation would be very low. Financial innovation compared with USA and Kenya. USA considered being the best in all economic reports compared to Kenya. USA Money and capital markets are largest and mostly highly developed in the world compared with other countries.

The proponents of activity diversification argued that innovation provided a stable and less volatile income, economies of scope and scale, and the ability to leverage managerial efficiency

across products (Choi and Kotozo, 2006). Chiorrazzo et al (2008) noted that as a result of financial innovation, the economies of scale and scope caused through the joint production of financial activities led to increased efficiency of Financial Institutions. Product mix reduced total risks because income from fee based activities was not correlated or at least perfectly correlated with income from fee based activities and therefore diversification should stabilize operating income and give rise to a more stable stream of profits (Uzhegove, 2010). Innovation has made it cheaper for institutions to achieve credibility in their role as screeners or monitors of borrowers (Diamond et al., 1986). Claessens and Jansen (2000) argued that foreign banks usually brought with them better know-how and technical capacity, which then spilled over to the rest of the banking system. These imposed competitive pressure on domestic banks, thus increasing efficiency of financial intermediation and they provided more stability to the financial system because they were able to draw on liquidity resources from their parents' banks and provided access to the international markets.

On the other hand, corporate finance theory suggests that firms should focus in order to obtain the greatest possible benefit from management's expertise and to reduce the agency problems leaving investors to diversify on their own (Jensen (1986), Berger and Ofek (1996) and Denis et al (1997). Delong (2001) found out that geographically focused bank mergers in the USA resulted in superior performance, while Stiroh and Rumble (2003) and Stiroh (2004) showed that a shift towards non-interest income did not offer large diversification benefits. Therefore there was need for more empirical evidence on the relationship between financial innovation and the Micro financial performance.

Olweny and Shipho (2011) carried out a study to evaluate the effects of banking sectoral-factors on the profitability of commercial banks in Kenya. They concluded that the bank-specific factors are the most significant factors influencing profitability of commercial banks in Kenya. Profitable firms were the ones that strived to be innovative; improve their capital base and reduced operational costs. This study aims at determining the relationship between financial innovations on the overall financial performance of MFI in Kenya. This study, to the researcher's knowledge, there were no studies that had been done to close the gap of knowledge in investigating the effects of financial innovation on financial performance of MFI's in Kenya.

In Kenya Kimeu (2012) and Rotich et al (2011) did a study that evaluated the effect of income diversity on commercial banks. However, none has been done on the MFI's in Kenya leaving a gap. It is in this regard this I have decided to take on this research. The main questions being what are the effects of financial innovation on the financial performance of the MFI's in Kenya.

1.3 Objective of the Study

The objective of this study is to determine the effects financial innovation on the financial performance of MFI's in Kenya.

1.4 Value of the Study

There has been a dramatic improvement in information technology which has led to new means of delivering financial services electronically also known as E finance. To maximize their profits financial institutions develop new products to satisfy their own needs as well as those of their customers that are innovation which is extremely beneficial to the economy. There were few studies that were carried out in the field on the effects of financial innovation on the MFI's performance despite the fact that the issue of focus versus innovation had existed in corporate finance literature over a long period of time. The few studies which were undertaken had resulted into mixed results and inconclusive evidence.

With the findings, the MFI's can get to know whether the current financial innovation mechanisms are beneficial or detrimental to them achieving their goals and after that enable them to plan and improve on their diversification. To scholars and future researchers the study will increase the field of knowledge and will give them an opportunity to reexamine the area of study and use the findings as a source of reference. The study will be used as a stepping stone to studying financial innovation and the effects to the financial performance of the MFI's in Kenya. To the shareholders, the study would assist to increase their knowledge on deciding whether to diversify or focus to boost their overall wealth. To prospective investors in the area of micro finance, they can have ideas on diversification of microfinance products and the effects of financial innovation to their institutions. To the scholar, the study would be a source of literature review and empirical reference which would provide grounds of further study to the scholar. To the regulator, CBK, to understand how better to mitigate the risks that engrossed the banking industry in Kenya. It would also

provide a guide to remedial regulatory schemes and supervisory programme to support operations of MFI.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section drew on literature in the area of diversification and focus. Secondary materials such as books, journals and articles which carry precious research work on the study topic were analysed. The material was of importance to this study as it formed a basis for observation which would be made during the study in line with the study objective.

2.2 Theories on Financial innovation

This section looked into the theories on innovation. It looked at the different schools of thought of different scholars and how they viewed innovation. The theories discussed here are; Black-Scholes Option- Pricing theory, traditional banking theory and intermediation theory.

2.2.1 Black-Scholes Option-pricing Theory

The Black-Scholes option-pricing model and other related models might also be thought of as process innovations. This line of theoretical research provided a scientific underpinning for option pricing, indicated how option writers might manage their risks by “delta hedging,” helped popularize a technique for pricing synthetic contracts i.e. the replicating portfolio approach, and alerted analysts to the fact that many common financial contracts could be usefully viewed as embodying option-like features that might be priced “scientifically” all of which encouraged the development of new products and market-making activity. To take one example, Dufey and Giddy (1981) noted that despite articles describing the benefits of foreign exchange options, the market appeared to be failing because the contracts were too specialized and too difficult to hedge. Since banks will generally be selling call options to corporate customers, there is no obvious place for banks to buy options to mechanically square their books. The “delta hedging” procedure offered a reasonable alternative for risk management, which has enabled the interbank foreign exchange option market to develop.

He noted that competition was vital for survival in a corporate environment. He defined a corporate environment as the industry the firm is. The corporate environment is full of

competition. Barney (2002) explains that diversification is one strategy to overcome the competition. By diversifying, companies can build market power.

2.2.2 Traditional Banking Theory

The traditional theory of the banking firm emphasizes on factors that are given by Llewellyn (1999). Information is very important in the financial system. Banks have comparative advantages in getting information than the other parties because banks hold account of their customers. When the firm does not want to disclose their information to the public, by holding and managing the customer accounts, banks can gain valuable information from them conveniently.

Bank plays the role of insurance by pooling all the deposit together to meet the liquidity needs of different depositors. This insurance services cannot be provided by the insurance company because of the risk is too low to meet the minimum standard of them. “Bank thus transform imperfectly marketable, long term assets into fully marketable, short-term liabilities, and in the process provides its debt-holders with insurance against the contingency that they will be caught short by an unexpected liquidity shock” Dowd (1996). Micro Finance Institutions play the role of agency by accepting the deposits and making loans; they solve a lot of problems of direct dealing with individuals and provide a convenient way to satisfy most of the customers’ needs. Banks still have the advantages that were given by the subsidies. Regulation makes the banking industry are less competitive. The entry barriers are so high that the other institutions cannot provide the banking services easily. Banks have the monopoly position and the comparative advantages in providing the traditional services.

2.2.3 Intermediation Theory

Current theories of the economic role of financial intermediaries build on the economics of imperfect information that began to emerge during the 1970s with the seminal contributions of Akerlof (1970), Spence (1973) and Rothschild and Stiglitz (1976). Financial intermediaries exist because they can reduce information on transaction costs that arise from an information asymmetry between borrowers and lenders. Financial intermediaries thus assist the efficient

functioning of markets; and any factors that affect the amount of credit channelled through financial intermediaries can have significant macroeconomic effects.

Current intermediation theory states that in the traditional Arrow-Debreu model of resource allocation, firms and households interact through markets and financial intermediaries play no role. “When markets are perfect and complete, the allocation of resources is Pareto efficient and there is no scope for intermediaries to improve welfare.” Franklin and Anthony, (1996), Gurley and Shaw (1960) also pointed out in the absence of market imperfections; there would be little need for financial intermediaries. When markets are perfect, intermediaries are redundant: they lose their function as soon as savers and investors have the perfect information to find each other directly, immediately and without any impediments and without costs. Therefore the imperfections of the markets give rise to the existence of the financial institutions.

In the traditional Arrow-Debreu model of resource allocation, firms and households interact through markets and financial intermediaries play no role. When markets are perfect and complete, the allocation of resources is Pareto efficient and there is no scope for intermediaries to improve welfare. Moreover, the Modigliani-Miller theorem applied in this context asserts that financial structure does not matter: households can construct portfolios which offset any position taken by an intermediary and intermediation cannot create value. A traditional criticism of this standard market-based theory is that a large number of securities are needed for it to hold except in special cases. However, the development of continuous time techniques for option pricing models and the extension of these ideas to general equilibrium theory have negated this criticism. Dynamic trading strategies allow markets to be effectively complete even though a limited number of securities exist. Gurley and Shaw (1960) and many subsequent authors have stressed the role of transaction costs. “Fixed costs of asset evaluation mean that intermediaries have an advantage over individuals because they allow such costs to be shared. In terms of asymmetric information, Leland and Pyle (1977) first point out that financial intermediation can invest their asset in the area that they have special knowledge, and Diamond (1984) also state that financial intermediation can overcome the problem of asymmetric information by delegated monitoring.

2.3 Determinants of Financial Performance

Starting in the 1960's, individuals and financial institutions operating in financial markets were confronted with drastic changes in the economic environment as follows: Inflation and interest changes climbed sharply and became harder to predict a situation that changed demand conditions in financial markets. The rapid advance in computer technology changed supply conditions. Financial regulations became more burdensome. Financial institutions have found that many of the ways of doing business were no longer profitable, financial services and products they were offering to the public were not selling. To survive in the new economic environment financial institutions had to research and develop new products and services that would meet customer needs and prove profitable a process known as financial engineering. Therefore there was need for innovation.

In recent years, deregulation and technological innovation had permitted almost all financial institutions to capture an increasing share of their income stream from non-interest sources. While part of the increase in non-interest income was due to diversification into lines of business such as investment banking, venture capital and insurance underwriting, growth in fee-paying and commission-paying services linked to traditional retail banking services had also been significant (DeYoung and Rice, 2004). The diversion of MFI's from relying on interest income to non interest income as highlighted determines the financial performance.

Efficient and effective service delivery is another determinant. This is because efficiency and effectiveness in service delivery lowers the cost of offering the services therefore low operating costs which leads to higher profits. MFI's generate their interest income from lending mostly unsecured facilities. Efficiency in loan control and monitoring determines the quality of the loan book. Poor control and monitoring methods leads to lower returns hence poor financial performance of the institution as a whole.

This results to greater capital mobility, greater similarity in the cost of funds in alternative capital markets, greater integration of international capital markets, and greater substitutability among assets as a result of improved hedging opportunities. 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 (Barney, 2002).

2.4 Empirical Review

This section looked into the theories on innovation. It looked at the different schools of thought of different scholars and how they viewed innovation. According to Tufano (2002), financial innovation is the act of creating and then popularizing new financial instruments as well as new financial technologies, institutions, and markets. Different reasons have been advanced as to the triggers of innovations, but broadly, they have been described by many as being optimal responses to various basic problems or opportunities, occasioned by incomplete (imperfect) markets that prevent risk shifting or asymmetric information.

DeGennaro (2005) defined market imperfection as anything that interferes with trade. He gave examples as transaction costs, taxes, information asymmetry, and asset indivisibilities. According to him, imperfections cause a rational market participant to deviate from his/her preferred risk level and refrain from holding the market portfolio. However, he claimed that market imperfections also generate business opportunities, that is, institutions or individuals that can lower costs which trace to imperfections have a competitive advantage and can earn economic rents. Miller (1986) wrote that the major impulses to successful financial innovations have come from regulations and taxes.

Modern finance theory assures us that securities can be used to transmute one form of income into another, in particular, higher taxed forms to lower taxed ones. For a variety of reasons, including especially the desire to blunt the force of previous successful innovations by taxpayers, most governments prefer to keep changing the structure, thereby altering the internal rate differentials and creating new opportunities for financial innovation. Other authors, such as Harris and Raviv (1991) argued that persistent conflicts of interest between outside capital providers and self-interested managers and asymmetric information between informed insiders and uninformed outsiders lead to an equilibrium in which firms issue a multiplicity of securities. Outside investors cannot easily assess the value of their assets, the institutions turn to investment banks to place these securities with their network of clients. These investment banks innovate,

creating new pools of these low-grade assets. Agency considerations interact with marketing costs to produce innovation.

The number of non interest income for the financial institutions has been on the increase. Goddard, McKillop and Wilson (2007), conclude that in 1993 to 2004 there was a steady increase in the share of non interest income in the operating income of the US credit union as a whole. The growth of non interest income was made possible by technological progress and deregulation. They also note that large credit unions are the ones that benefited most from diversification unlike small unions which lack expertise and have less capital. They argue that big financial institutions have capacity to expand by diversification unlike small institutions which are sometimes run by unqualified personnel and may not have adequate technology. Chang and Elyasiani (2008), doing their research in 510 Financial holding companies in USA on relationship of financial performance and insurance as an additional product , using quaternary panel observations of year 2003-2005, find out that bank expansion into non interest activities can improve risk adjusted performance. Insurance activities according to them can help small sized financial holding companies improve on risk adjusted returns but do not have consistent significant impact on performance of very large financial companies.

While doing a research on the effects of rising competition on the incumbent lenders, Craig et al (2004), come up with various conclusions on MFI competition. The research done in the years 1998 to 2002 in Uganda aimed at analysing the behaviour of borrowers in case of competition of MFI's particular entry of a new DTMFI. Data was collected from individuals, groups and district information centres on microfinance. The number of MFIs has been on the increase and that has finished the monopoly initially in the market. They also noted that credit saturation was lower in the rural areas though there was more entrance of MFIs there than in the urban centres. Competition brings about deterioration in performance of loans and a decrease in saving deposits among incumbent DTMFI. This is because clients take up multiple loans thus damaging the repayment rate of the incumbent MFI. The MFI does also have to share on the deposits hence lesser deposits per MFI. They found out that loan volumes in the market don't change hence entrants of new MFI just brings more sharing of current loans volumes. All this shows that we cannot avoid competition and ways have to be made to stay competitive. This is where

diversification comes in handy. For sustainability the income avenues have to be increase in a competitive market hence increase in performance.

There is other research that has been done on the relationship between performance and diversification in banks. Souza and Lai (2003) dealing with diversification of loan portfolio with respect to region in Canada and efficiency of big five chartered banks, found that the banks were systematically underperforming hence no sufficient efficiency diversification. However a merger between banks with different business lines but similarities in the region composition can result to more efficient entity. Turkmen and Yigit (2012) assessing the relationship between sectoral diversification and bank performance in 40 banks in turkey find that diversification had a negative effect on performance. They argue that diversification brings about increased cost hence lesser profit.

Zohra and Pandey (2011) took a study to compare the financial performance of microfinance institutions with that of commercial banks in India. They conclude from their findings that there is no significant difference in return on equity, return on assets, debt equity ratio and net profit margin. However there is a significant difference in operating expenses to total assets of commercial banks to microfinance institutions on the advantage of commercial banks. The conclusion is that MFIs incur high operating costs because of their business model which is a door step delivery model. Banks on the other side incur lower cost because the customers mostly come to be served. Huang and Chen (2008) on their research based in Taiwan on commercial banks for year 1992 to 2004 notes that banks with high interest income and low noninterest income operate more cost effectively. This is because diversification causes an additional cost. Those that had diversified were less cost effective. They also note there is a growing percentage of a non interest income in the operating incomes in Taiwan.

One of the arguments is that diversification is brought up to increase organizational competitiveness. Jensen (1986) states that competition in the product and factor market drive prices towards average cost hence reduce the marginal revenue. Managers must therefore increase efficiency for survival of the organization. There are many ways of dealing with competition which includes takeovers, mergers, diversification and expansion in the same line of business Risk management is also another argument that brings up diversification. Diversification is one tactic that firms use to manage risk. Pyle (1997) defines risk management

as process by which manager satisfy the needs of potential risk measuring by identifying the key risks, obtaining constant, understandable, operational risk measures, choosing which risk to reduce and which to increase and by what means, establishing to monitor the results risk position. The main risk that can be reduced by diversification is called the unsystemic risk. Firms undertake a variety of actions to reduce risks through diversification, including entering diverse business lines, taking on project partners and maintaining portfolios of risky projects such as research and development of natural resource exploration (Hermalin and Kutz, 2004). Diversification aims at reducing the overall risk.

There are several relationships that have been researched on with diversification. One of them that have been brought to light is the relationship between diversification and informativeness. There is a positive corellation between diversification and informativeness hence risk reduction according to Hermalin and Kutz (2004). By informativeness we mean the owners (shareholders), who are the principals in the agency theory, having information about agents (in these case managers). The owners prefer a return structure that entails a high degree of risk but is highly informative to one that has low risk and lowly informative. This is where the agency conflict originates. Diversification enables the owners to get more information on the managers and hence reduce the risk that the owners have set on their investment. But this depends largely on the managers where the manager can choose to follow the owners preferred diversification conditions or take the whole responsibility of diversifying. This latter, which is known as delegation can sometimes prove costly for the owner hence more risky. In this case the manger will have increased risk. So in essence the corellation between risk and diversification lies heavily on the manager. If he follows the owners preferred diversification, then the risk is reduced.

Another relationship that has been compared with diversification is with firms" performance (Marinell, 2011). The main question he asks is whether the relationship is causal. He concludes by saying there is a relationship between diversification and performance but it is not causal , it is attributable to factors other than the degree of relatedness among business units and the degree of internal efficiency of the market which has a statistical significance contribution but a marginal explanatory power to explain the persistence of positive and negative return. That is positive relationship between performance and diversification goes beyond the simple

explanation of an efficient internal capital market or a certain degree of relatedness among business segments.

In a Kenyan case, Kimeu (2012) evaluates the effects of income diversity to performance of commercial banks. In the study period 2000-2010, he concludes that there are a few benefits expected in income diversification from traditional banking although there was a growing importance of non interest income. He notes that noninterest income is more volatile and with increased volatility, there are fewer benefits from diversification. A higher diversification is associated with low lending rates according to central bank of Kenya, being a benefit to the banks by avoiding over reliance on interest income. Rotich et al (2011) on their case on Kenyan commercial banks found out that there is a linear relationship between diversification and financial performance. In their research of 44 banks in Kenya year 2005-2009 concludes that financial diversification leads to improved performance. Larger banks have a greater ability to expand. They also note that non interest based income has been on the increase. Finally interest and non interest incomes are found to be correlated.

Mwega (2009) carried out a study to examine performance of the banking industry in Kenya over the last ten years and he concluded that the industry had improved tremendously as only two banks had been put under Central Bank of Kenya statutory management during that period compared to 37 banks failures during between 1986 and 1998.

Kamau (2009) carried out a survey that showed that an increase in the degree of foreign ownership in Kenya is associated with reduction of cost inefficiencies, suggesting that the degree of foreign-owned banks influenced the performance of the local banking sector. Oloo (2009) described the banking sector as the bond that held the country's economy together. Sectors such as agricultural and manufacturing virtually depended on the banking sector for survival and growth.

In some studies diversification has proved helpful in times of economic crisis. Kuppuswany and Villalonga (2010) note that diversification increased in the 2007-2009 financial crisis in U.S.A. They note that diversification gave firms both financing and investment advantages. The value of diversified firms increased relative to single segment firms during the same crisis and that the value of diversification has increased beyond the crisis. Another study was done by Herimo and

Mekonnen (2012) this time on MFI in Ethiopia for year 2004 to 2009. In this institution, there was no diversification during the year. The MFI was on the increase until 2009 when the effects of economic crisis were experienced. It went to a decline in 2009.

However, there have been various studies that have not very much approved the use of diversification for competition. Jensen (1986) one of his conclusions is that diversification programs are more likely to generate losses than takeovers or expansion in the same line of business or liquidated motivated takeovers. This is to mean they are a bit more risky than other forms of dealing with risk. Product diversification in the financial sector came up as a result of structural forces of change. Gamra and Plihon (2011) results support that this is what led to banks diversifying to new business strategies incase of this forces of change.

They note that there has been that diversion lately and in the firms side it means increased cost. The returns however are able to cover the cost especially during crisis. However the is the probability that there will be diseconomies of scale in some cases of diversification. This occurs due to the poor monitoring, incentives that induce risk of default and decrease return when a bank expands into the industry where it faces lack of skills and expertise. In essence one fails to just diverse, proper planning and implementation is necessary.

One interesting field has been diversification in the micro finance sector. This has often been referred to as combined microfinance (CMF). Microfinance refers to loans, savings, insurance, transfer services and other financial products targeted at low-income clients. A combination of this three or any two bring about combined microfinance. Rossel (2008) defines combined microfinance as the delivery of at least two financial product categories. Microfinance thinking has changed from focus on a credit mono product to a full array of financial services and from a target of microenterprises to the broader marketing low income households including both business and family needs (Rhyne and Otero, 2006). The ideal array of services is a basic core package savings, credit, insurance and payments. There are also special financial products for growing microenterprises or agricultural businesses e.g. bill payments, pension which target different segments for the clients (Rhyne and Otero, 2006).

Rossel (2012) on his research on 250 MFIs in Latin America and Caribbean conclude that there is increased efficiency in MFIs after diversifying. This efficiency does not lead to overall

sustainability. Since MFIs are aimed at social impact, financial performance comes second though it is very important for sustainability. This is because most MFIs rely on grants to evade collapse. While offering loans has been the primary activity of MFIs, there have been several diversifications in it. Dallien et al (2005) discuss on the loan lending has been diversified. Before group lending was the mode of lending that was used by microfinance organisations to do the lending. The screening of the loanee, following up the loanee, monitoring and enforcing of issues lied on the group. This has been diversified by offering loans to individuals. When lending is done to an individual, a lot of responsibility lies on the MFI since the manager and the lending institution are the ones responsible for screening and following up. These loans are tailor made based on specific needs of each applicant. Another service that has been introduced that is close to loans is leasing. Since MFI target the poor the leasing for small equipment, the difference of leasing and loans is that in leasing, the equipment is given to the client and has to make periodical payments until it is fully paid. Until then the equipment remains the property of the institution. It is usually a contract between the MFI (leaser) and the lessee (the borrower). At the completion of regular payments the ownership of the equipment is transferred to the lessee. This provides an increased customer base for the institution besides the profit gained from this. The main challenge with this is that it is the responsibility of the leaser to ensure that the equipment remains in a good order until all the payments are made hence extra work for the MFI.

2.4 Summary of Literature Review

There is consensus that non interest income indicates diversification is taking place in the MFIs and that there is also growth of non- interest income in financial institution. This has been brought about by need to keep on with competition from others. This diversification in MFIs has often been referred to as combined microfinance. MFIs have a social role in poverty alleviation and to get this they have to remain viable in the long run this has made them to diversify. The literature reviewed suggests that there is a conflicting agreement on regards to the effect of diversification on performance.

Athanasoglu et al, (2006) concurred and argued that profitability is a function of mainly internal factors that are influenced by a bank's management decisions and policy objectives such as the level of liquidity, provisioning policy, capital adequacy, expense management and bank size, and

the external factors related to industrial structural factors such as ownership, market concentration and stock market development and other macroeconomic factors. Several models of the banking firm have been developed to deal with specific aspects of bank behaviour but none is acceptable as descriptive for all bank behaviour.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discussed the research methodology that was used in conducting the study. It focused on the research design, target population, data collection, and data analysis and presentation techniques. These were carefully chosen to ensure accuracy, reliability and validity in order to realize the objectives of the research. The research aimed at identifying the type of diversification services that MFI's offer and how they affect their performance. It tried to explore deeper on the issue of profitability and social action of the microfinance sector.

3.2 Research Design

Research design is a detailed outline of how an investigation took place. It typically included how data is to be collected, what instruments were employed, how the instruments would be used and the intended means for analysing data collected. This study adopted a descriptive research design. Descriptive research design refers to a statistical method that quantitatively analyses the empirical evidence of a specific field of research. This study sought to determine the effects financial innovation on the financial performance of DTMFI's in Kenya, which formed a case study investigation for this study.

Saunders, Lewis & Thornhill (2009) recorded that descriptive research design is widely accepted in the field of finance and economics since it is proving to be very useful in policy evaluations. The study adopted the descriptive research design. According to Saunders, Lewis & Thornhill (2009) descriptive technique provides accurate information of persons, situations or events. Descriptive research design was employed to describe the financial performance of the DTMFIs of the previous years.

3.3 Study Population and Sample Size

3.3.1 Population

According population is the total collection of elements about which the researcher wishes to make some inferences (Saunders, Lewis & Thornhill, 2009). It is also defined as the entire group of individuals, events or objects having a common observable characteristic (Saunders, Lewis &

Thornhill, 2009). The target population consisted of the 12 DTMFIs and 50 non-deposit taking MFI's operating in Kenya. The DTMFIs in Kenya were not homogeneous, thus the researcher employed stratified sampling. The strata are the DTMFIs and Non-Deposit Taking MFIs from which the sample was selected (See Appendix 1)

3.3.2 Sample Size

According to Saunders, Lewis & Thornhill (2009) sample size refers to a given number of events, cases or members from the accessible population which selected carefully to show a representation of the entire population with relevant characteristics. A sample represents a smaller group obtained from the study population. The researcher adopted simple random sampling to select 12 DTMFIs that will be used involved in the study. This number was considered appropriate due to constraints of time and costs involved. The simple random sampling procedure was preferred because it allowed unbiased sampling and offers the research work more scientific feature and thus making the validity of the research findings more concrete.

3.4 Data Collection

Data collection refers the process of obtaining and measuring information to answer questions that motivated the undertaking of the research. Secondary data was obtained from the Central Bank of Kenya (CBK). Secondary data is the information that has been collected by others (Saunders, Lewis & Thornhill, 2009).

For the purposes of this study data was obtained for 7 years, ranging from 2008- 2014. This study used Return on Equity (ROE) as the dependent variable to measure financial performance of DTMFIs. The researcher obtained secondary data to study variables which included interest income, non-interest income and a ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas. For the purpose of this study, secondary data were gathered from the Association of Microfinance Institutions (AMFI), Central Bank of Kenya (CBK) and published newspapers (interest income and non-interest income), and the DTMFIs' websites (A ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas).

3.5 Data Validity and Reliability

Data validation is the process of checking that data conforms to specification. It is usually the first process undertaken on raw data. The kinds of checks that may be carried out include: number and type of characters, consistency between one data item and others in the same record, correctness of check, totals for individual records and correctness of batch controls. The information used in this study was compiled from reliable and credible sources justifying completeness and accuracy of the data used. The data used could not remain the same since financial situations are dynamic, but fully reflect the period during which the research was conducted.

3.6 Data Analysis

Saunders, Lewis & Thornhill (2009) observed that data analysis involves organizing, accounting for and explaining that data, that is, making sense out of data in terms of respondent's definition of the situation noting patterns, themes, categories and regularities. Data were analysed using descriptive statistics. Closed questions were analysed using quantitative analysis while open ended questions are to be analysed using qualitative methods.

3.6.1 Conceptual Framework

The conceptual model that was used in this study was in the form of a mathematical expression.

It is in the form:

$$Y=f(X_1, X_2, X_3)$$

Where:

Y= Financial performance

X₁= Interest income

X₂= Non interest income

X₃ = A ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas

The variables in the model were measured using the ratio scale. The dependent variable were determined by rate of change of Return on Equity (ROE) from the year 2008 to 2014. Interest income was measured by proportion of total loan advanced by DTMFIs to its assets. Non-interest was measured by the proportion of revenue earned from other activities other than loan advances

while financial innovation will be measured by a ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas.

Secondary data were gathered and organized in spread sheets and analysed using SPSS version 20. The results were organized in tables and charts to answer study questions. Multiple regression and Partial Correlation analysis were conducted to establish the coefficients and establish the nature of relationship between the dependent variable and each of the independent variables and its strength. It was expected that there would be a strong positive relationship between the dependent variable and the independent variables.

3.6.2 Analytical Model

The study used a multiple regression model as represented below.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu_i$$

Where:

Y: Financial Performance (measured in ROE)

α = Constant/the intercept point of the regression line and the y-axis

X_1 : interest income

X_2 : non interest income

X_3 : A ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas

β – Determines the relationship between the independent variable X and the dependent or Gradient/Slope of the regression measuring the amount of the change in Y associated with a unit change in X.

μ_i – Normally distributed error term

Financial Performance= $\alpha + \beta_1$ (Interest Income) + β_2 (Non-interest Income) + β_3 (A ratio of revenue from new ideas divided by the cost incurred in implementing the new ideas) + ϵ

The strength of the relationship between the dependent and the independent variables were measured by carrying out f-test and student's t-distribution test at 5% level of significance and 95% level of confidence. The test was to establish whether the coefficients β_1 , β_2 , and β_3 were significantly different from zero and this being, thus it would be concluded that there is a strong positive relationship between the dependent and independent variables.

3.6.2 Test of Significance

The study sought effect of financial innovation on microfinance performance in Kenya. The researcher made use of inferential statistics, Pearson Product Moment correlation coefficient R^2 and the coefficient of determination R of the data set as well as p-value and F-test statistics.

Performance measures were used were Return on Assets (ROA) and Return on Equity (ROE). These performance variables were used for all MFIs to account for diversification between two major types of income generating activities; interest income and noninterest income. Since the main business of a microfinance institution is offering loans, their main source of income is interest. So any other income is classified as non interest income. In financial statements, interest income is usually separated from non interest income.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

The study focused on determining the effects financial innovation on the financial performance of MFI's in Kenya. This chapter outlined data analysis, presentation and interpretation of research findings. The study also intended to determine whether interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas influence financial performance of DTMFIs in Kenya.

4.2 Descriptive Statistics

The study established the following descriptive statistics, as shown table 4.2.1

Table 4.2.1 Descriptive Statistics

Statistics				
	X ₁	X ₂	X ₃	ROE
Mean	3080185.8571	428825.7143	.2017	.1771
Median	3476576.0000	489125.0000	.2090	.1230
Mode	1257124.00 ^a	274123.00 ^a	.14 ^a	.06 ^a
Std. Deviation	918440.53923	124545.36154	.03982	.14296

a. Multiple modes exist. The smallest value is shown

Source: Author's Computation (2015)

Where:

X₁: Interest Income

X₂: Noninterest Income

X₃: A ratio/ percentage of revenue to cost incurred in implementing the new ideas

ROE: measures Financial Performance

The findings gathered from this study established that financial performance of DTMFIs is influenced by financial innovation, which is determined by variables including interest income, followed by non-interest income, and finally a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, as shown by corresponding mean, median and mode shown in table 4.2.1 above. However, it is evident from the findings of table 4.2.1 that the financial data analysed were not exactly normally distributed since mean, median and the mode are not equal, though they were sufficiently appropriate for the purpose of this study.

4.3 Correlation Analysis

This study adopted a correlation analysis to establish statistical relation between two or more variables such that systematic changes in the value of one variable are accompanied by systematic changes in the other variable. Pearson correlation established the variables used in the study had strong relationship, as shown in table 4.3.1. The study findings established a high correlation noninterest income, followed by interest income, and finally a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, as shown by corresponding Pearson Correlation matrix in table 4.3.1 below.

Table 4.3.1: Correlation Analysis

		Correlations			
		X ₁	X ₂	X ₃	ROE
X ₁	Pearson Correlation	1	.567	.209	.611
	Sig. (2-tailed)		.184	.653	.145
X ₂	Pearson Correlation	.567	1	.882**	.621
	Sig. (2-tailed)	.184		.009	.137
X ₃	Pearson Correlation	.209	.882**	1	.342
	Sig. (2-tailed)	.653	.009		.452
ROE	Pearson Correlation	.611	.621	.342	1
	Sig. (2-tailed)	.145	.137	.452	

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

Source: Author's Computation (2015)

4.4 Regression Analysis

The study sought to determine the nature of the relationship, which is the strength and the direction of the relationship that exist between the study variables. The regression analysis results were as shown in table 4.4.1 below.

4.4.1 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759 ^a	.576	.153	.13159

a. Predictors: (Constant), X₁, X₂, X₃

R square refers to the co-efficient of determination that provides the variation in the dependent variables caused by changes in the independent variables. From the findings presented in table 4.4.1, the value of adjusted R-squared was given as 0.576 that revealed that that there was a 57.6% financial growth performance among the DTMFIs as a result of improved interest income, non-interest income, and a ratio/percentage revenue earned as a result of implementing new ideas divided by the cost incurred in implementing new ideas at 95% confidence interval.

R is the correlation co-efficient which shows the relationship between the variables used in this study. The findings establish a strong relationship of 0.759 between the study variables. This study is based on dependence and independence association, which has been analysed with the use of multiple regression analysis, and thus a multiple regression analysis is mathematically expressed as: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$

Y: Financial Performance (measured in ROE)

α = Constant/the intercept point of the regression line and the y-axis

X₁: interest income

X₂: non interest income

X₃: A ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas

β – Determines the relationship between the independent variable X and the dependent or Gradient/Slope of the regression measuring the amount of the change in Y associated with a unit change in X.

μ_i – Normally distributed error term

The use of multiple regression analysis was employed to study four variables used in this study, which included interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, with a focus to DTMFIs in Kenya.

4.4.2 Analysis of Variance

The probability value (p-value) of a statistical hypothesis test is obtaining a value of the test statistic as either extreme or more than extreme than that observed by chance alone, which implies that if the null hypothesis H_0 is true. The p-value is compared with the actual significance level of the test and, if it is smaller, the result is significant. The smaller it is the more convincing is the rejection of the null hypothesis.

The ANOVA findings in table 4.4.2 established that a correlation exists between the predictor variables (interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas) and the response variable, that is, the financial performance of DTMFIs since P- value of 0.040, which is less than 0.95 (95%).

Table 4.4.2 ANOVA

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.071	3	.024	1.361	.040 ^b
Residual	.052	3	.017		
Total	.123	6			

a. Dependent Variable: ROE

b. Predictors: (Constant), X₁, X₂, X₃

Source: Author's Computation (2015)

Where, letters used in the table above can be explained as follows:

Df: denotes degrees of freedom

F: denotes Anova

α : denotes level of significance

Fo: refers to the calculated value of F

Fc: denotes the critical value of F

Ao: calculate value of α

α_c = the critical value of α .

The ANOVA summary presented above provides the discussion and analysis of the variance. Variance analysis tests differences in variables means or group means for statistical significance. It therefore partitions the total variance into component that is due to true random error and that due to differences between means.

ANOVA analysis establishes whether the variation in the independent variables explains the observed variance in the outcome this study has on the DTMFIs financial performance. The results of ANOVA show that the independent variables significantly (F=1.361, p=0.040) explain

the variance on financial performance. As explored in the previous discussion, the dependent variable is the level of financial performance whereas the independent or the predictor variables are interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas.

4.4.3 Regression Model Coefficients

The table below presents the determination of coefficients regression equation.

Table 4.4.3: Regression Coefficients

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.164	.502		1.326	.034
1 X ₁	.626	.000	.040	1.058	.039
X ₂	.173	.000	.150	2.049	.027
X ₃	.351	.434	.980	3.809	.019

a. Dependent Variable: ROE

Source: Author's Computation (2015)

From the table 4.4.3 findings above, the established regression equation can be as shown below.

$$Y = 0.164 + 0.626 X_1 + 0.173 X_2 + 0.351 X_3$$

Where

Constant = 0.164, shows that if financial innovation including interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, then the financial performance of DTMFIs would be 0.164

X₁= 0.626 shows that a unit change in interest income results in 0.626 units increase in financial performance.

$X_2 = 0.173$ shows a unit change in noninterest income results in 0.173 units increase in financial performance.

$X_3 = 0.351$ show a unit change in a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas that results in 0.351 units increase in financial performance.

4.5 Discussion of the Study Findings

This study sought to establish dependence and independence relationship, and a multivariate model was applied to determine the relative effect of each of the four variables with respect to the effects of financial innovation on financial performance of DTMFIs in Kenya. The findings of this study established that interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas influence financial performance of DTMFIs. Descriptive statistics findings established that interest income has the most influence on economic empowerment, among the other three variables, as shown in table 4.2.1.

Results obtained from the regression analysis and the coefficient of determination (the R squared of 0.576) in table 4.4.1 shows the variation in the dependent variable as a result of changes that occurred in the independent variables. The findings obtained from this study reveal that the regression analysis shows interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas at 95% confidence interval. R is the correlation coefficient that presents the relationship between the study variables. From the findings shown in table 4.4.1, there was a strong positive relationship between the study variables as indicated by the correlation coefficient R of 0.759.

ANOVA analysis intended to ascertain whether variation in the independent variables explain the observed variance in the outcome, which is the financial performance of DTMFIs in this study. ANOVA findings in table 4.4.2 indicate that there is correlation between the predictor variables, which are interest income, non-interest income, and a ratio/ percentage of revenue

from new ideas divided by the cost incurred in implementing the new ideas, and the response variable is the financial performance since P-value of 0.040. This study establishes that there is strong relationship between the study variables. The coefficient of determination R, explains the extent to which the dependent variable can be explained by the independent variable.

From table 4.4.3, the constant of 0.164 indicates that if interest income, non-interest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas were rated as zero, then the financial performance would be 0.164. Interest income variable, X_1 0.626 shows that one unit change in interest income 0.626 units increase in the financial performance, while X_2 0.173 shows that one unit change in the noninterest income increase leads to 0.173 units increase in financial performance, while X_3 0.351 shows that one unit change in ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas results in 0.351 units increase in financial performance. From these findings, it implies that noninterest income has the greatest positive impact on financial performance, and this is followed by ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas and finally interest income.

These study findings concur with Goddard, McKillop and Wilson (2007), who conducted a study between in 1993 to 2004 and ascertained that there was a steady increase in the share of non interest income in the operating income of the US credit union as a whole. They reaffirmed that the growth of non interest income was made possible by technological progress and deregulation. They also note that large credit unions are the ones that benefited most from diversification unlike small unions which lack expertise and have less capital. Their argument was based on the premise that big financial institutions have capacity to expand by diversification unlike small institutions which are sometimes run by unqualified personnel and may not have adequate technology.

The finding results also conform to a research on the effects of rising competition on the incumbent lenders, by Craig et al (2004), who come up with various conclusions on MFI competition. The research done in the years 1998 to 2002 in Uganda aimed at analysing the behaviour of borrowers in case of competition of MFI's particular entry of a new DTMFI, and

data was collected from individuals, groups and district information centres on microfinance. The number of MFIs has been on the increase and that has finished the monopoly initially in the market. They also noted that credit saturation was lower in the rural areas though there was more entrance of MFIs there than in the urban centres, and this implies that competition brings about deterioration in performance of loans and a decrease in saving deposits among incumbent DTMFIs. The reason for this is clients take up multiple loans thus damaging the repayment rate of the incumbent MFI, and this could be attributed to low influence of interest income on financial performance of DTMFIs as evident from the findings presented in table 4.4.3.

The findings of this study are also in conformity to the empirical study of Zohra and Pandey (2011), who conducted a study to compare the financial performance of microfinance institutions with that of commercial banks in India. The researchers concluded from their findings that there is no significant difference in return on equity, return on assets, debt equity ratio and net profit margin, but there is a significant difference in operating expenses to total assets of commercial banks to microfinance institutions on the advantage of commercial banks. This also conforms to a Kenyan case, in which Kimeu (2012) evaluates the effects of income diversity to performance of commercial banks. In the study period 2000-2010, he concludes that there are a few benefits expected in income diversification from traditional banking although there was a growing importance of non interest income.

There is also a concurrence of the study findings with empirical study by Rotich et al (2011) on their case on Kenyan commercial banks found out that there is a linear relationship between diversification and financial performance. In that research of 44 banks in Kenya year 2005-2009 concludes that financial diversification leads to improved performance. Larger banks have a greater ability to expand. The researchers also established that non interest based income has been on the increase. Finally interest and non interest incomes are found to be correlated.

On the contrary, the findings of this study disagrees with the works of Jensen (1986), whose one of his conclusions is that diversification programs are more likely to generate losses than takeovers or expansion in the same line of business or liquidated motivated takeovers, and this

implies that they are a bit more risky than other forms of dealing with risk. It also disagrees with the premise that product diversification in the financial sector came up as a result of structural forces of change. Gamra and Plihon (2011) results support that this is what led to banks diversifying to new business strategies in case of this forces of change.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines a summary of findings of the study; section 5.2 provides a summary of the findings; section 5.3 discusses the conclusion, while section 5.4 explains the limitations of the study and Section 5.5 gives the recommendations for further research.

5.2 Summary of the Study

The study sought to establish effects of financial innovation on financial performance of Deposit Taking Microfinance Institutions (DTMFIs). A quantitative descriptive design was used to study 12 DTMFIs. Secondary data on financial reports were gathered from Association of Microfinance Institutions (AMFIs), Central Bank of Kenya (CBK), DTMFIs websites, local newspapers, and financial journals. This study has been based on dependence and independent relationship with moderate multiple regression analysis being employed. A multivariate regression model was used to establish the relative importance of each of the three variables which are interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, on the financial performance.

Descriptive statistics established that financial performance of DTMFIs is highly influenced by interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas as shown by the corresponding mean, median and mode presented in table 4.2.1. However, the study findings were not exactly normally distributed since mean, median, and the mode were not equal, though, they were sufficiently appropriate for the purpose of this study.

The ANOVA analysis was performed to determine whether the variation in the independent variables explains the observed variance in the outcome, which is the financial performance in this study. ANOVA findings in this study revealed that there was correlation between the predictor variables including interest income, noninterest income, and a ratio/ percentage of

revenue from new ideas divided by the cost incurred in implementing the new ideas and response variable being financial performance since P- value of 0.040 which is less than 0.95 (95%). This implied that there was a strong positive relationship between variables employed in this study.

The probability value (p-value) of a statistical hypothesis test is obtaining a value of the test statistic that is either extreme or more extreme than that observed by chance alone, which implies that if the null hypothesis H_0 is true. The probability value (p-value) is compared with the actual significance level of the test and, if it is smaller, the result is significant. The smaller it is the more convincing to reject the null hypothesis. ANOVA analysis indicated that there was correlation between the predictor variables, including interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, and the response variable, that is, financial performance since P-value of 0.040 was less than 0.95. The results obtained from ANOVA analysis indicated that the independent variables significantly ($F=1.361$, $p=0.040$) explain the variance in financial performance.

A regression analysis was conducted to establish that the three of the independent variables (interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas) have a positive correlation with the dependent variable (financial performance). The regression analysis established coefficient of determination (R): 0.759, correlation coefficient (R-squared): 0.576, F-test statistics (1.361) and P-value (0.040), and since R was positive (0.759), the relationship between financial innovation and financial performance of DTMFIs was positive.

5.3 Conclusion and Policy Recommendations

Based on these study findings, it can be concluded that positive financial performance of DTMFIs is due to the results of increased changes in interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas. The management of DTMFIs should put in place effective financial innovation mechanisms to help them achieve their financial goals, plan and improve diversification.

The findings gathered from this study established that there is a positive relationship between interest income, noninterest income and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas, and financial performance of DTMFIs. This study also established that financial innovation (interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas) influences financial performance of DTMFIs positively. The management of DTMFIs should focus on innovative products and noninterest investment schemes, which boost financial productivity of the business. Moreover, it can be concluded that effect of interest income, noninterest income, and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas on financial performance of DTMFIs was a positive performance ($p = 0.040$). The Central Bank of Kenya (CBK) should provide effective guide to remedial regulatory schemes and supervisory programmes, which support operations of DTMFIs.

5.4 Limitations of the Study

The study was limited to licenced DTMFIs since unlicensed microfinance and non-depositing taking MFIs had scanty secondary data that would not facilitate the study findings.

The Management of the DTMFIs, who were consulted, did not provide timely responses on data that was requested. The researcher had to make several calls and follow-up visits before the required information was finally availed.

Management bureaucracy was a challenge since some staff members of the consulted organisation felt they did not have the mandate to provide the required data despite having provided authorisation letter to gather data for research purposes.

Some DTMFIs were registered recently and financial data relating to the past years could not be obtained for this study, thus limiting the scope of the study to cover seven years.

Some DTMFIs had not published their annual reports online, and therefore it was not easy to gather some of the required data. The management or staff could not avail the required records, and this could be attributed to poor record keeping and lack of proper storage facility of financial information among some of these institutions.

5.5 Suggestion for further research

Since the study was limited to DTMFIs, a further study can be recommended on the non-Deposit Taking Microfinance Institutions.

Microfinance institutions include informal and formal (licenced) ones, and they have varied characteristics in their operations, which should necessitate the need to extend future studies to cover the non-licensed ones as well.

Further studies should explore reasons behind noninterest income and a ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas as the highest contributors to financial performance of DTMFIs.

More studies can be done to explore the impact of influx of DTMFIs on the financial performance of other financial institutions, including commercial banks in Kenya.

A further study can be recommended to establish the challenges DTMFIs are facing in the provision of credit to smallholder enterprises and individuals. This study has established a low score for interest income in the contribution to financial performance of DTMFIs, which can be attributed to low uptake or access to credit by smallholder enterprises and individuals.

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APPENDICES

APPENDIX I: LIST OF DTM INSTITUTIONS IN KENYA

Faulu Kenya DTM Limited

Kenya Women Finance Trust DTM Limited

SMEP Deposit Taking Microfinance Limited

Remu DTM Limited

Rafiki Deposit Taking Microfinance

UWEZO Deposit Taking Microfinance Limited

Century Deposit Taking Microfinance Limited

SUMAC DTM Limited

U&I Deposit Taking Microfinance Limited

Choice Microfinance Bank Limited

Daraja Microfinance Bank Ltd

Caritas Microfinance Bank Ltd

APPENDIX II: INTRODUCTORY LETTER



UNIVERSITY OF NAIROBI
SCHOOL OF BUSINESS
MBA PROGRAMME

Telephone: 020-2059162
Telegrams: "Varsity", Nairobi
Telex: 22095 Varsity

P.O. Box 30197
Nairobi, Kenya

DATE.....

TO WHOM IT MAY CONCERN


The bearer of this letter Rehob Ngahi Kibura
Registration No. DCI/70 852 / 2014

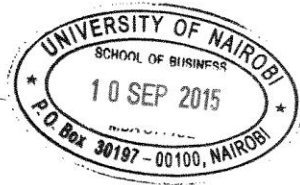
is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.


PATRICK NYABUTO
MBA ADMINISTRATOR
SCHOOL OF BUSINESS



APPENDIX III: FINANCIAL DATA OF DTMFIs

Year	Interest Income (sector average in ksh '000')	Non-interest Income (sector average in ksh '000')	A ratio/ percentage of revenue from new ideas divided by the cost incurred in implementing the new ideas (sector average in %)	Financial Performance (ROE) (sector average in %)
2008	2,802,674	274,123	14.3%	5.5%
2009	3,476,576	307,548	16.2%	12.3%
2010	3,598,042	489,125	20.9%	44.7%
2011	3,602,871	496,214	21.9%	16.5%
2012	2,802,942	501,107	25.5%	9.8%
2013	1,257,124	328,742	19.2%	6.3%
2014	4,021,072	604,921	23.4%	28.9%

Data Sources: *Computed from DTMFIs Annual Reports 2008-2014*
Association of Microfinance Institutions, AMFI (2015)