

**THE EFFECT OF FINANCIAL INNOVATION TECHNIQUES ON RISK
MANAGEMENT BY NON-FINANCIAL INSTITUTIONS IN KENYA**

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DECLARATION

This research project is my original work and has not been presented for an award in any other University.

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TABLE OF CONTENTS

| | |
|--|-------------|
| DECLARATION | ii |
| ACKNOWLEDGEMENT..... | iii |
| LIST OF TABLES | vii |
| LIST OF FIGURES | viii |
| ABSTRACT..... | ix |
| CHAPTER ONE | 1 |
| INTRODUCTION | 1 |
| 1.1 Background to the study | 1 |
| 1.1.1 Non-Financial Institutions in Kenya..... | 3 |
| 1.2 Statement of the problem..... | 4 |
| 1.3 Objective of the study | 6 |
| 1.3.1 Main Objective | 6 |
| 1.3.2 Specific objectives..... | 6 |
| 1.4 Significance of the study..... | 7 |
| CHAPTER TWO | 9 |
| LITERATURE REVIEW | 9 |
| 2.1 Introduction..... | 9 |
| 2.2 Review of Theories | 9 |
| 2.2.1 Black Scholes Option pricing model..... | 9 |
| 2.2.2 Modern Portfolio Theory..... | 11 |
| 2.2.3 Agency Theory | 14 |
| 2.3 Review of Theoretical studies..... | 15 |
| 2.4 Common derivatives | 19 |
| 2.5 Performance | 21 |

| | | |
|--|--|-----------|
| 2.6 | Chapter summary | 22 |
| CHAPTER THREE | | 24 |
| RESEARCH METHODOLOGY | | 24 |
| 3.1 | Introduction..... | 24 |
| 3.2 | Research Design..... | 24 |
| 3.3 | Population | 24 |
| 3.4 | Sample..... | 24 |
| 3.5 | Data collection | 25 |
| 3.6 | Analysis..... | 25 |
| 3.7 | Data Validity and Reliability | 25 |
| CHAPTER FOUR..... | | 26 |
| DATA ANALYSIS AND PRESENTATION OF FINDINGS..... | | 26 |
| 4.1 | Introduction..... | 26 |
| 4.1.1 | Response Rate..... | 26 |
| 4.2 | Demographic Information..... | 26 |
| 4.2.1 | Gender Composition | 27 |
| 4.2.2 | Age of respondents..... | 28 |
| 4.2.3 | Qualification of respondents | 29 |
| 4.2.4 | Firms Shareholding Structure..... | 30 |
| 4.3 | Financial Instruments | 31 |
| 4.3.1 | Introduction..... | 31 |
| 4.3.2 | Reasons for Trading Derivatives | 31 |
| 4.3.3 | Impact of Derivatives on Company's Profit Margin | 34 |
| 4.3.4 | Possible Risks Inherent to the Firm. | 34 |
| 4.3.5 | Risk Evaluation Techniques | 39 |

| | |
|---|-----------|
| 4.3.6 Challenges Faced by Derivatives users in Kenya | 39 |
| 4.3.7 Countermeasures to Address Derivatives use Challenges | 39 |
| 4.3.7.1 Regression Analysis | 39 |
| 4.3.8 Impact of Derivatives on the Kenyan Economy | 39 |
| 4.4 Summary and Interpretation of the Findings | 40 |
| 4.4.1 Summary | 40 |
| 4.4.2 Interpretation | 40 |
| 4.4.3 Major Findings | 41 |
| 4.4.4 Comparison of Findings with Previous Studies | 42 |
| CHAPTER FIVE | 43 |
| SUMMARY, CONCLUSION AND RECOMMENDATIONS | 43 |
| 5.1 Summary | 43 |
| 5.2 Conclusions | 44 |
| 5.3 Recommendations | 45 |
| 5.4 Limitations of the Study | 46 |
| 5.5 Suggestions for Further Studies | 46 |
| REFERENCES..... | 48 |
| APPENDIX ONE..... | 50 |
| Research Questionnaire | 50 |

LIST OF TABLES

| | | |
|------------|--|----|
| Table 4.1 | Major Financial Instruments used for Hedging Risks in Kenya..... | 31 |
| Table 4.2 | Reasons for Trading Derivatives | 32 |
| Table 4.3 | Impact of Derivatives on Compny's Profit Margin..... | 31 |
| Table 4.4 | Risks Inherent to the Firm | 34 |
| Table 4.5 | Risk Evaluation Techniques | 35 |
| Table 4.6 | Challenges in the use of Derivatives..... | 34 |
| Table 4.7 | Measures towards Addressing Derivatives Challanges..... | 34 |
| Table 4.8 | Regression Model Summary..... | 34 |
| Table 4.9 | ANOVA (Analysis of Variance)..... | 34 |
| Table 4.10 | Estimated Coefficients..... | 34 |
| Table 4.11 | Impact of Derivatives on the Kenyan Economy | 34 |

LIST OF FIGURES

| | |
|---|----|
| Figure 4.1 Gender Composition of respondents | 27 |
| Figure 4.2 Age of respondents | 28 |
| Figure 4.3 Qualification of Respondents | 29 |
| Figure 4.4 Shareholding Structures of the Companies | 30 |

ABSTRACT

The recent global financial crisis has led to the development of derivatives markets in most of developed economies. Derivatives are the major icon among risk management practices. Firms usually use derivatives to hedge their foreign exchange and interest rate risks. This study aimed to examine the effect of Financial Innovation Techniques on Risk Management by Non-Financial Institutions in Kenya. The study adopted a descriptive research design and used primary data from 39 non-financial firms listed in Nairobi Securities Exchange of which 31 firms responded. Based on the theoretical investigation, we find that institutions use derivatives for hedging, liquidity and risk management purposes. Also, there is evidence that arbitrageurs and speculators use derivatives too for different reasons. Despite challenges such as complexity in use of derivatives and lack of organized markets, the efficacy of derivatives as a means of managing economic and other forms of risks remain widely accepted. Data collected was used to develop a multiple regression model using SPSS. From the findings information diffusion, transparency, skills and regulations and technology support at 1%, 5%, and 10% level significance, were significant in explaining the variation in derivatives usage. These findings suggest that financial innovation strategies are associated with risk management.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

In today's competitive world, financial derivatives occupy a significant and integral part of the global capital markets. Starting in the 1970s and increasingly in the 1980s and 1990s, the world became a riskier place for both financial and non-financial institutions. Swings in the interest rates widened and the bond and stock markets went through some episodes of increased volatility. As a result of these developments, managers of institutions became more concerned with reducing the risks in their institutions (Mishkin, 2012). Given the greater demand for risk reduction, the process of financial innovation came to the rescue by producing new financial instruments that help financial institution managers manage risk better. These instruments are called financial derivatives.

Derivatives are complex financial instruments that derive their value from an underlying instrument or asset such as a commodity or a currency. According to Bouzouita and Young (1998), derivatives are important risk management tools. They allow industries to trade exposures, diversifying risk and reducing earnings volatility. The most widely used derivative instruments include: forwards, futures, options, swaps and forward rate agreements.

The volatility of the Kenya Shilling against the Dollar has increasingly forced industries in Kenya dealing with imports and exports to hedge against risks such as transaction risks, foreign currency risks, interest rate risks and commodity or product Hedging.

Transaction exposure defines the foreign exchange rate risk in terms of the impact of exchange rate movement on the firm's future cash flows. It arises from an obligation to either accept or deliver foreign currency at a future date.

Foreign Exchange risk arises due to dealing with transactions denominated in non-functional currencies. In the current global financial landscape, managing currency risk is an important function of government, institutions, banks, importers, exporters and modern businesses houses. Currency futures provide an alternative to hedge currency risk at low transaction cost with greater transparency and safety on an Exchange.

Interest rate risks arise when a company finances its operations from international markets. If a company owes a large amount of debt at a variable, or floating, interest rate, it may prefer to lock in its debt at a fixed rate to insulate itself from an interest-rate hike (Wharton's Gordon M. Bodnar, 1996).

Commodity or product risk arises due to uncertainties of future market values and the size of the future income, caused by the fluctuation in the prices of the commodities. These commodities may be grains, gas or electricity.

An investor therefore, should identify the desired level of risk that he is willing to take on his investments, identify and measure the actual level of risk that he is carrying; make arrangements which may include trading of derivatives contracts that allow him to match the actual and desired levels of risk. Furthermore, derivative markets can facilitate the management of financial risk exposure since they allow investors to unbundle and transfer financial risk. In principle, such markets could contribute to a more efficient allocation of capital and cross-border capital flow, create more opportunities for diversification of

portfolios, facilitate risk transfer, price discovery, and more public information (Tsetsekos and Varangis, 1997).

1.1.1 Non-Financial Institutions in Kenya

From Nairobi Securities Exchange handbook 2013, there are 38 listed non-financial companies which fall under agricultural sector, Automobile and accessories, Commercial services, construction, energy and petroleum, manufacturing and telecommunication and technology. These companies trade in foreign countries and they experience risks associated with their dealings in one way or another. Although the types of risks confronting managers vary across industries, firms dealing with imports and exports realize that the market prices of the commodities they deal with in their businesses will fluctuate. The risk associated with this price volatility is one of the most obvious and well-studied aspect of price risk management (Hawes, 2003)

Under Vision 2030 non-financial sectors of the economy are being strengthened. Agriculture, for example, has been identified as one of the key drivers of the economy. In order to sustainably achieve average economic growth of 10 per cent, reduce poverty levels and boost food security future exchange commissions has to be established. In addition, recent discoveries of oil, gas and other mineral resources are likely to sustain the creation of new industries over the next few years. Finally the country's potential for clean energy use in geothermal, hydroelectric, wind and solar power also supports the creation of a large energy sector that can support the growth of the broader region. As these sectors flourish, the capital markets will be well placed to offer spot markets and derivatives markets based on agriculture, energy and mineral/metal commodities.

The most obvious opportunity is for the market to trade and clear interest rate, foreign exchange and equity based derivatives (futures and options). However, such a market and its supporting clearing infrastructure needs to be built and operated to be compliant with the most recent international recommendations and best practice and regulated by a regulator that has the necessary legal underpinnings, rules, and regulations to effectively regulate such a market. The regulator will also need to have in place the necessary staff with appropriate skills to effectively monitor such a market and clearing arrangements (Capital Markets master Plan 2014-2023).

1.2 Statement of the problem

Non-financial institutions in Kenya, which engage in imports and exports, are exposed to a number of risks while carrying out their operations. The major exposures being the foreign exchange exposure and interest rate risks owing to growing diversity of business operations and globalization. These risks, if they are not managed effectively they result in losses, financial distress and business failure (Chapman, 2006). To manage these risks, companies have to sort out for complex ways that can help to minimize these risks through use of derivatives and financial engineering techniques.

There have been many new ideas in risk management and risk measurement from international and local point of view. According to John C. Hull 2009 derivatives are very important tools in the Western world for transferring risks from one entity to another. In February 2004 the China Bank Regulatory Commission (CBRC) permitted non-financial institutions to trade derivatives and observe the risk management procedures. The derivatives traded included forwards, futures, swaps, options and structured products. This was an important change for market's potential for growth. Historically, large derivatives exchanges were almost exclusively located in the US. Today, Europe is the most important region in the

global derivatives market. In India, derivatives markets have been in existence for a long time.

(Chiira, 2009) conducted a survey of foreign exchange risk management practices by oil companies in Kenya. The data was collected from the target population comprising 27 major oil companies operating in Kenyan market. The study found that foreign exchange risk is the second most significant exposure to oil companies after fluctuation in global crude oil prices and therefore most of the companies find it as an important risk to manage. Us Dollar is the currency to which all the oil companies are mostly exposed because importation costs are settled in this currency. It was established that all the companies practiced internal hedging techniques (changing the currency of billing) and external hedging techniques (derivatives ie futures). The recommendation was that oil companies should enhance their foreign exchange risk management practices by increasing the use of derivatives.

(Ngugi et.al, 2008) researched on factors influencing development of financial derivatives markets in Kenya. The study was done on firms listed at the Nairobi Security Exchange. The findings showed that factors influencing development of financial derivatives were legal and regulatory framework, market environment, operational efficiency and role of financial market intermediaries. Hence the study concluded that there is need of building upon existing financial derivatives instruments so as to enhance efficiency and effectiveness in their use in Kenya as modern tools for financial risk management.

(Chepkairor, 1987) undertook a study on an assessment of the impact of foreign exchange fluctuations on projects partly funded through foreign currency denominated loans. The study highlighted the sharp increase in foreign investment in Kenya and also how multi-national and transnational corporations are playing an increasingly important role in the Kenyan Business. This has raised concerns for organized fund management and for the application of

innovative hedging techniques for protecting themselves against attendant risks. The conclusion was that derivatives are the tools that facilitate trading in risk.

Therefore, this study sought to fill the existing research gap by conducting a study on the effect of financial innovations techniques in risk management by non-financial institutions listed at the NSE (Nairobi Securities Exchange)

This study attempts to address the following research questions:

1. Which are the most suited derivative instruments for hedging risks in the Kenyan market and what are the reasons for their use?
2. What challenges do local industries encounter while using these derivatives?
3. What are the countermeasures implemented to curb these challenges?
4. What is the impact of derivatives use on the Kenyan economy?

1.3 Objective of the study

1.3.1 Main Objective

The topic establishes the impact of financial innovation and its instruments in Kenyan economy.

1.3.2 Specific objectives

The objectives of the study are to:

1. To identify the most suited derivative instruments for hedging risks in the Kenyan market and the reasons for their use.
2. To establish the challenges faced by users of derivatives in Kenya.
3. To identify the counter measures implemented to curb the challenges faced.

4. To identify the impact of derivatives use on the Kenyan economy.

1.4 Significance of the study

Although the type of risks confronting institutions and industries vary, there is substantial commonality in the underlying rationale for the use of derivatives and the financial engineering techniques employed by managers. Groups of people who benefit from use of derivatives include the Government, Corporate and foreign investors, Mutual funds and Financial institutions.

The government may find the need to accelerate the development of derivatives market to attract foreign capital, which would improve the balance of payments for the country thus improving the economic growth of the country. Since any fluctuations in foreign currency or foreign interests are likely to affect the debt repayment services by government and firms the derivatives trading would help in hedging against fluctuations and thus lock-up the prices to pay and thus be able to plan ahead without the price worries

Corporate investors who are knowledgeable use derivatives to manage effectively exposures to external influences on their business over which they have no control. British Airways provided an example of this type of usage. As the price of fuel can vary considerably, BA hedges this exposure through the use of derivatives, which allows the company to focus on its core business. By taking out a futures derivative to purchase some of its fuel in advance of its receipt at a fixed price, they are protected against an increase in fuel prices. If prices fall below the level set in the contract, the loss made on the derivatives contract is offset by the lower cost of fuel that they buy in a conventional manner.

Foreign institution investors use derivatives to manage risk. Risk management is the process of identifying the desired level of risk, identifying the actual level of risk and altering the

latter to equal the former. According to modern portfolio theory (MPT) higher returns are desirable while higher return variance is undesirable. Therefore, investors would benefit from derivatives with better return-risk relation for which the risk is measured using the variance of returns. Thus, the better risk-return relation associated with the use of derivatives would also be beneficial for investors.

Mutual funds are asset-management firms and they use derivatives to make speculative investments on the movement of the value of an underlying asset to obtain exposure to an area that it is not possible to invest in directly, or create an option where the value of the derivative is linked to a specific condition or event. Thus, stock index futures are used to hedge and manage diversifiable and non-diversifiable risks. Derivatives generally create leverage. As a result, a small movement in the underlying asset's value can cause a large difference in the value of the derivative and result in large profits or losses depending on the direction of the change.

Financial institutions such as banks and insurance companies argue that financial innovations can improve economic performance by lowering transaction costs or increasing liquidity, and by reducing agency costs. The use of derivatives allows banks to improve their capital buffers that absorb risk and this results in lower costs and greater value Sinkey and Carter (1995). The proper use of derivatives can lower bank-financing costs, and consequently improve their efficiency.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Effective risk management is a critical factor for institutions that want to delivery in redefined cost, time and quality. Bartramet.al. (2011) provided strong evidence that the use of financial derivatives reduces both total risk and systematic risk. Duangployet.al.(1997) stated that since all the companies are risk averse, they would hedge their potential risk. Some of them are highly averse to risk and they totally hedge it. Other companies hedge risk selectively based on their own view to the future changes in the market. This chapter examines the theoretical review of financial engineering techniques used to manage interest rates, foreign exchange or commodity price risks by various industries.

2.2 Review of Theories

The neoclassical economics regards derivatives as the necessary instruments providing not only liquidity or risk spreading, but enabling the existence of the perfectly competitive market, since without derivatives there is no possibility of managing risks. Derivative markets are believed to bring about financial deepening in an economy through the various services they provide. Below we have three theories which have been discussed to supplement literature review.

2.2.1 Black Scholes Option pricing model

Every investment practitioner knows of the enormous impact the Black-Scholes option pricing model has had on investment and derivatives markets. The greatest success of the theory is in the derivatives market for foreign exchange. The Black–Scholes model was first

published by Fischer Black and Myron Scholes in their 1973 paper, "The Pricing of Options and Corporate Liabilities", published in the Journal of Political Economy. They derived partial differential equation, now called the Black–Scholes equation, which estimates the price of the option over time. The key idea behind the model is to hedge the option by buying and selling the underlying asset in just the right way and, as a consequence, to eliminate risk.

The key assumption in Black-Scholes Option pricing model is lack of arbitrage opportunities and operating in a frictionless market. Arbitrage is generally defined as the simultaneous purchase and sale of the same securities, commodities or foreign exchange in different markets to profit from unequal prices. Any no arbitrage argument for pricing a derivative is ultimately based on a replication strategy, which is a trading strategy that uses market instruments to ‘replicate’ the initial and final positions required by the derivative. If we have two strategies with the same initial position, and guaranteed final positions, then these final positions must be equal. Otherwise, by going long on the strategy with the higher final value and short on the other we would generate an arbitrage. The arbitrage pricing theory does not depend on the real world probabilities. The pricing is done in a risk neutral world.

The primary objective for using the Black-Scholes model is the calculation of the theoretical value of an option but in some trading environments as in the case for exchange traded options, an actual market price of an option is observed. The basic paradigm of how trading in currency options operates is rife with Black-Scholes concepts. Options are identified in the first instance not by strikes but by their deltas. Traders might ask for the 50 deltas or 15 delta options for example. Currency options prices are not quoted in currency but in terms of volatility. The genius of quoting option prices in volatility is that price comparison across currencies, strikes and term to expiration is instantly achieved. After an option is bought or

sold, traders turn to the option pricing model to transform the volatility price into price in currency.

In essence, the Black-Scholes model states that by continuously adjusting the proportions of stocks and options in a portfolio, the investor can create a riskless hedge portfolio, where all the market risks are eliminated. The ability to construct such a portfolio relies on the assumptions of continuous trading and continuous sample paths of the asset price. In an efficient market with no riskless arbitrage opportunities, any portfolio with zero market risk must have an expected rate of return equal to the risk-free interest rate.

In theory, the Black-Scholes model should work perfectly for European options, if one would be able to rebalance a portfolio of derivatives continuously and if the expected volatility would be a constant equal to the volatility of the stock price. The experiments for European options show that, even though rebalancing cannot be done continuously in reality, the risk that comes with trading European call options can still be controlled. Rebalancing as frequent as every day would still prevent large hedging errors from occurring and does well on average. However, constantly hedging with a wrong expected volatility can result in large hedging errors. From the trader's perspective, overvaluing an option can be profitable, but undervaluing an option can cause a loss.

2.2.2 Modern Portfolio Theory

Harry Markowitz wrote an article titled Portfolio Selection that was published in 1952 and is the basis of Modern Portfolio Theory. Modern Portfolio Theory (MPT) approach invests by examining the entire market and the whole economy to find a balance between maximizing your return and minimizing your risk. The objective is to select your investment in such a way it diversify your risks while not reducing your expected return. The idea is to pick asset

classes that are not strongly correlated to each other such that market movements by these financial assets are less volatile (or made smoother) over time.

MPT, also commonly referred to as mean-variance analysis, introduced a whole new terminology which now has become the norm in the area of investment management. By treating asset returns as random variables, Markowitz unified the concepts of return, variance and covariance into qualitative framework. Return was defined as the weighted expected return of each security in the portfolio while risk was expressed as the second moment of portfolio returns. The covariance matrix of asset returns was then used to capture the linear association between assets on an optimization process. The notion that the behavior of the overall investment portfolio is more important than the behavior of each individual security was seminal contribution of Markowitz and the birth of MPT as we know it today. Influential economist of our time such as Miller (1999) refer to the Markowitz (1952) publication in the journal of Finance as the “Big Bang” in modern finance.

Recent market turbulence, coupled with the presence of increasing strict regulatory constraints have led institution investors (pension funds, insurance companies) and asset managers to monitor the volatility and downside risk of their equity holdings with increased scrutiny. One approach towards the design of equity portfolios in the presence of tight risk budgets involves building equity portfolio benchmarks with the lowest possible volatility. This has led to use of option positions and futures contracts that generate the target level of long volatility exposure Bakshi and Kapadia (2003), Carr and Wu (2010)

Derivatives significantly broaden the range of investment strategies that a portfolio can utilize. Combining traditional assets with derivative-implemented strategies produce more risk efficient portfolios and this increase the likelihood of good outcome of a portfolio. Futures on fixed income instruments such as bonds help investors or managers to neutralize

biases in terms of factor exposures (changes in level or slope of the yield curve) that may result from bond picking bets. Conversely, an investor may decide to protect himself from market risk in order to conserve only the return linked to the active bets taken by a manager. Another natural use of bond futures is for timing strategies between different maturity segments of the bond market. In addition, it is possible to create leveraged positions through futures, following arbitrage strategies between the future contracts and the underlying or hedging interest rate risk.

Option strategy favorite with investors and asset managers alike is a protective put buying (PPB) strategy. This strategy consists of long position in the underlying asset and a long position in a put option which is rolled over as the option expires. The PPB strategy has been widely studied in the context of equity portfolio management (Merton et al. (1982), Figlewski et al. (1993). At the end of every sub period, however, the long position in the put option offers a protective against downside risk, which leads to avoiding the left tail of the return distribution. More precisely, the PPB strategy has lower downside risk, while achieving returns that are considerably above those for the bond futures strategy.

The derivatives market offers numerous benefits to investment managers and the clients they serve by providing the opportunity to manage risks more effectively. Investment managers creatively use derivative strategies in client portfolios in order to mitigate risk, employ leverage, gain synthetic exposure to securities, and diversify exposure. As the derivatives market has evolved, the instruments have become more complex in nature and their use has become increasingly common. With respect to all derivative instruments, we encourage our clients to be cognizant of their exposure and the risks and rewards that are involved in using such instruments. The appropriate level of derivative exposure depends on a client's risk tolerance and portfolio objectives. Given the complexity of instruments, clients should

discuss with their fixed income managers the current exposure to derivatives, the intended use within portfolios and appropriate guideline restrictions. (EK research 2009).

2.2.3 Agency Theory

Agency theory has been widely used in the areas of finance, corporate governance, and strategic management. It is defined as the cost involved in resolving the problem in case of differences between the principal and the agent (Eisenhardt, 1989). Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In organizations, agency issues have been shown to influence managerial attitudes toward risk taking and hedging (Smith and Stulz, 1985). The theory also explains a possible mismatch of interest between shareholders, management and debt holders due to asymmetries in earning distribution, which can result in the firm taking too much risk or not engaging in positive net value projects (Mayer and Smith, 1987). Consequently, agency theory implies that defined hedging policies can have important influence on the firm value (Fama & Pfleiderer, 1995).

Jensen and Meckling (1976) argue that agency conflicts may arise when managers hold an undiversified portfolio of equity and human capital invested in a single firm. Therefore, risk-averse managers may be motivated to reduce firm risk for personal gain at the expense of diversified shareholders. There are several cases where top managers would have the highest incentives to use derivatives to reduce risk.

First, if CEO cash compensation contains a large risk component that is outside his control, then he may wish to use derivatives to hedge this risk. In particular, a compensation plan that includes a large bonus component based on accounting measures of performance may induce a manager to hedge accounting numbers.

Second, insiders and top managers with high levels of personal wealth vested in firm equity may use derivatives to hedge firm value to reduce the risk of their undiversified investment portfolio. Firm-wide hedging makes managerial stock ownership a more effective device to induce managers to maximize firm value (Stulz, 2003). However, some form of managerial compensation such as options on the company stocks might induce managers to become risk seekers, hence hedge less and to take on more risks which will have negative impact on shareholders wealth. Other compensation contracts depending on the relation between firm value and management compensation payoff will induce managers to hedge the complete value of the firm or only a part of it.

Third, if a CEO receives a post-retirement compensation package based on the firm's accounting performance prior to the CEO's retirement, then he may use derivatives to hedge accounting numbers to reduce the risk of this compensation. In theory, the preceding incentives can be eliminated if shareholders can write optimal compensation contracts. However, such contracts may be costly to negotiate and implement. Moreover, if equity ownership is diffuse, then there may be reduced incentives for individual shareholders to write and enforce optimal management contracts.

2.3 Review of Theoretical studies

Over the past three decades many different studies on financial derivatives use by non-financial firms were published, covering different aspects and types of derivative use in hedging a wide spectrum of risk types, which non-financial firms face while conducting their day to day business. Anchoring the global financial system, different Exchange rates and the recent volatile regime of floating rates have led to the use of derivatives because they may provide a solution to hedge against the price volatility of the asset (Vashishtha and Kumar, 2010). Governmental and corporate actors have responded to this volatility by using

derivatives to protect themselves from undue fluctuations in prices. Other financial actors have seen opportunities for profit through speculating on the likely changes in foreign exchange and interest rates as well as equities buying and selling derivatives contracts.

The history of derivatives from antiquity to the time of Louis Bachelier and VinzenzBronzin is traced. The first derivatives on securities were written in the Low Countries in the sixteenth century. Derivative trading on securities spread from Amsterdam to England and France at the turn of the seventeenth to the eighteenth century, and from France to Germany in the early nineteenth century. Reliable statistics on the growth of derivatives became available in the mid1990s when the Euro Currency Standing Committee (renamed the Committee on the Global Financial System in 1999) of the Group of 10 Central Bank Governors at the Bank for International Settlements (BIS) became concerned with the rising levels of risk exposure of global industries active in the derivatives field.

Duffie (2007) argue that the growth of derivatives industry both in developed and emerging sub-Saharan market, rely on international harmonization of accounting disclosure. Vashishtha and Kumar (2010) also argued that innovation of derivatives have redefined and revolutionized the landscape of financial industry across the world and derivatives have earned a well-deserved and extremely significant place among all the financial products.

The growth of information technology has created the equity markets as we know them today. Financial markets and intermediaries today are globally linked through a vast international telecommunications network, so that the trading of securities and the transfer of payments go on more or less continuously around the clock Robert C. Merton and ZviBodie (1995).To play in the global derivatives markets, firms need a global presence, high levels of technical expertise and sophisticated information and communication systems to manage risks on global scale.

In an efficient derivatives market, price and cost efficiency are enabled through product and technological innovations. Indeed, the major driver behind innovation is competition, as every new product or technological innovation is an opportunity for financial intermediaries to compete for new trading volumes and revenue opportunities. As most innovations in the financial sector are not eligible for intellectual property protection, market participants must constantly innovate to maintain their market leadership. Initially, product innovations are usually introduced within unregulated markets. Here, the flexible regulatory environment provides favorable conditions for product innovations.

In legal and regulations of derivative market, policy and institutional factors play a key role in development of the capital markets. Investors require confidence, protection and information to participate in the market. According to Ion press accounts and popular debates, a few large losses such as Gibson, Procter & Gamble a soap company that dropped \$150 million or so on derivatives and Metallgesellschaft that lost close to a billion and half on oil futures have been cited as examples that these markets can be risky. These are just examples of how derivatives can cause losses if no regulations are put in place. The information and disclosure focuses on the market information and transparency, and the impact of the information on the behavior of the market participants. The attempts by the governments to cooperate have been complicated by the complexity of the issues involved, particularly when it comes to disclosure and transparency.

The central government is responsible for all regulatory aspects of the Capital Markets Authority (CMA) and the Nairobi Securities Exchange (NSE). Administratively, the securities markets in Kenya fall under the powerful Ministry of Finance (Treasury) which is in turn accountable to the Parliament. CMA being the principal government institution responsible for regulating derivatives markets, it has primacy in enforcing the provisions of

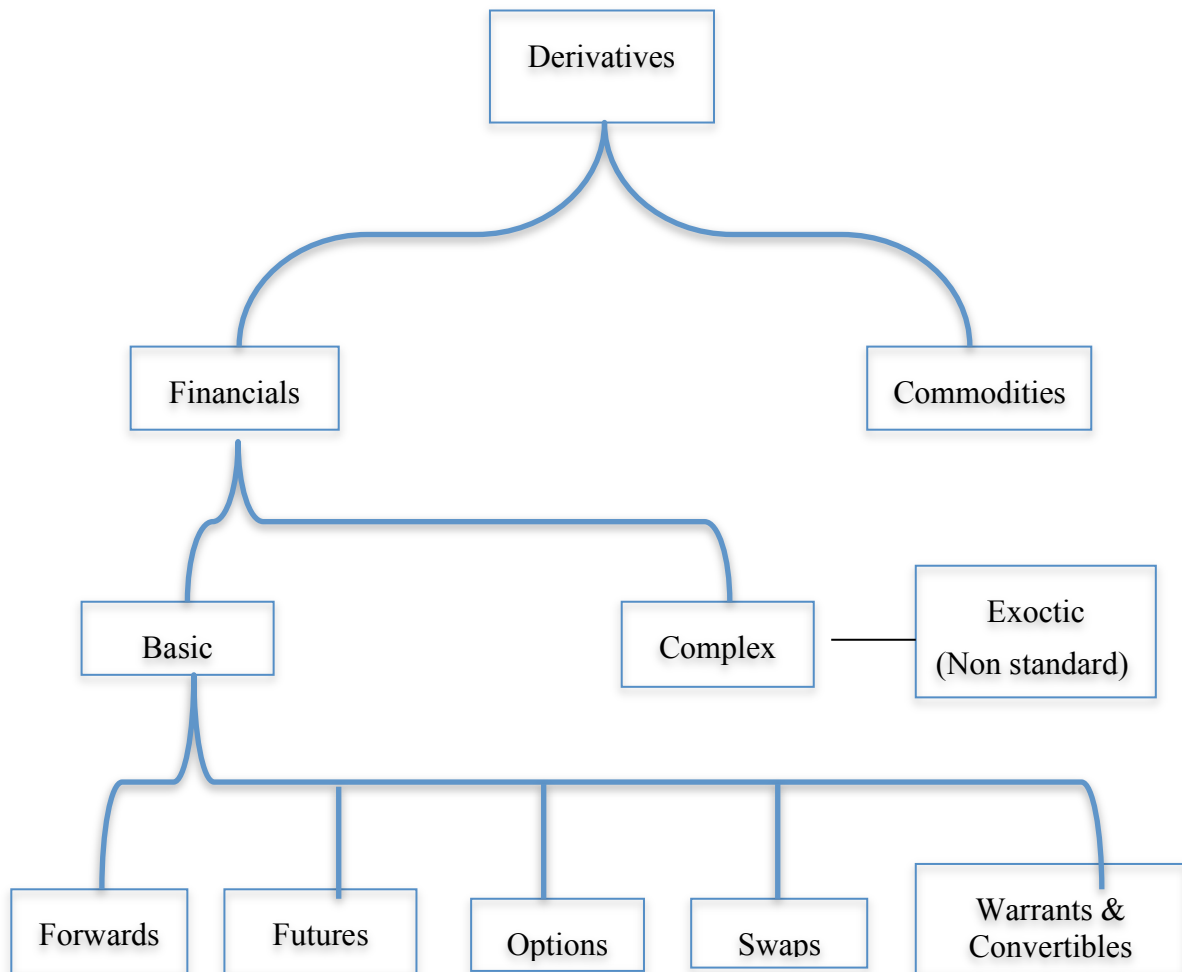
the Capital Markets Act and other Rules and Regulations relating to derivative markets. Significantly, the CMA enjoys the full complement of powers which a typical regulator should have in order to discharge its mandate effectively.

Securities enforcement in Kenya include: prevention, monitoring and information gathering and, power of intervention, sanctions, penalties and judicial proceedings. Whereas prevention commences the enforcement continuum, imposition of appropriate sanctions on those found responsible signifies its conclusion. The Capital Markets Act, Central Depositories Act and the CMA Regulations prescribe numerous requirements for registration, licensing, approval and authorizations. This is intended to ensure that the standards are sufficiently high to protect the unsuspecting public. To ensure that the derivative markets are continually improving, licensing of intermediaries is done on an annual basis and the Authority has discretion to decline the renewal. Before 2008, neither the Minister of Finance nor the Capital Markets Authority had statutory power to prescribe or impose sanctions or penalties on market intermediaries and listed companies for breach of provisions of the Capital Markets Act. However, the CMA's licensing regulations empowered it to impose a variety of sanctions on licensees, their directors and employees as well as listed companies and their directors.

Those worried about the dangers from unregulated derivatives should be assured that derivatives already are very extensively regulated. The derivative market intermediaries (DMIs) should ensure that their agents or employees involved in OTC derivatives activities possess the necessary levels of knowledge and expertise to understand the risks and obligations resulting from OTC derivatives transactions and the operation of OTC derivatives markets in general. Individuals acting on behalf of DMIs should have the education, training and experience necessary to perform OTC derivatives activities competently or to supervise

the performance of OTC derivative activities, including understanding the structure, features and risks of each derivative transaction or product. The competency of DMI representatives is important to ensure that, where applicable, counterparties or clients are provided sound service and advice.

2.4 Common derivatives



Forwards and Future Contracts are agreements in which the buyer agrees to purchase and the seller agrees to deliver, at a specified future date, a specified financial instrument or commodity at a specified price or yield. These contracts are usually written in reference to the spot or today's price. The difference between the spot price at time of delivery and the forward or future price is the profit or loss by the purchaser. At maturity the disadvantaged

party pays the advantaged party only the difference between the contracted forward outright rate and the prevailing spot rate.

Options Contracts confer either the right or the obligation to buy or sell a financial instrument or commodity at a specified price on a specified future date. The price at which the sale takes place is known as the strike price and is specified at the time the parties enter into the option. The option contract also specifies a maturity date. For European option the sale can take place only at maturity but for American option the sale can take place at any time up to maturity. There are two types of options: call option and put option. The buyer of a Call option has a right to buy a certain quantity of the underlying asset, at a specified price on or before a given date in the future, he however has no obligation whatsoever to carry out this right. Similarly, the buyer of a Put option has the right to sell a certain quantity of an underlying asset, at a specified price on or before a given date in the future, he however has no obligation whatsoever to carry out this right.

Swaps are relatively young as a product class, first making their appearance only in the late 1970s. They are transactions in which two parties agree to exchange payment streams based on specified notional amount for a specified period. Many times a swap will occur because one party has a comparative advantage in one area such as borrowing funds under variable interest rates, while another party can borrow more freely as the fixed rate. The three common swaps are:

Currency Swaps - One party exchanges loan payments and principal in one currency for payments and principal in another currency.

Interest rate Swap, Parties exchange a fixed rate for a floating rate loan. If one party has a fixed rate loan but has liabilities that are floating, then that party may enter into a swap with

another party and exchange fixed rate for a floating rate to match liabilities. Interest rates swaps can also be entered through option strategies.

Commodity Swaps - This type of contract has payments based on the price of the underlying commodity. Similar to a futures contract, a producer can ensure the price that the commodity will be sold and a consumer can fix the price which will be paid.

Warrants and Convertibles are long-term securities which can be changed into another type of security such as common stock. Convertibles include bonds and preferred shares but most commonly take the form of bonds. Warrants grant investors the right to purchase shares at a fixed price known as exercise price for a predetermined amount of time often several years.

2.5 Performance

In the last 30 years, or a bit more, trading with derivative financial instruments has become one of the most efficient means to boost the rate of return and reduce the risk in portfolio management. What is more important, as an instrument for functioning and development of the financial markets, financial derivatives provide the quality and quantity of the supply and demand of capital, improve business climate, and create opportunities for new jobs, thus contributing to the decline in unemployment.

The main usage of derivatives is to minimize risk for one party while offering the potential for a high return at increased risk to another. The wide spectrum of potential underlying assets and payoff alternatives leads to a diverse range of derivatives contracts available to be traded in the market.

Comprehensive international study conducted by Bartram, Brown, and Fehle (2009) involving 50 countries worldwide examined what motivates the use of financial derivatives by corporations. One of the conclusions was that firms with less liquid derivatives markets,

typically in middle-income countries, are less likely to hedge. This finding is consistent with the assertions of some policy makers that derivatives could be important in limiting the severity of economic downturns in developing economies. The impact of this finding is reinforced by other results showing that these firms, which are typically located in countries with higher economic and financial risk, prefer to hedge more often.

2.6 Chapter summary

One of the developments in finance over the last 30 years has been the growth of derivatives market. In many situations, both hedgers and speculators find it more attractive to trade a derivative on an asset than to trade the asset itself. While derivatives can in principle also be used for speculative purposes, there is some evidence that firms do indeed use derivatives (mostly) for the purpose of hedging. The findings of Tufano (1996) and Allayannis and Ofek (2001) support the idea of derivatives being used for hedging purposes. In contrast, there is also some, though limited evidence of speculation (market timing) in firms' interest rate risk management practices (Faulkender, 2005).

Derivative instruments are an important tool for the development of capital markets and broader economy. Financial and non-financial firms utilize derivatives as a key tool to protect against risks that are inherent to their businesses. Recently the trading volume of derivatives in advanced economies has escalated rapidly, and non-financial firms continue to purchase and trade them in ever-greater numbers. Three types of derivatives being offered are: currency forwards, currency swaps, and interest rate forwards. The main reason for a poor offer by the banks is low demand, lack of the non-financial firms' knowledge about benefits of derivatives and the relatively low number of business operations on the global market by non-financial firms.

Finally, the study's findings indicate that companies not currently using derivatives may begin to gradually delve into the instruments. The researchers cited three main reasons to expect this increased acceptance: Company risk managers will likely become more comfortable with derivatives. Over time, the instruments will shake the stigma created by much-publicized derivative blow-ups. And, as volatility in the financial markets increases, companies will seek out ways to hedge their risks

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out various stages and phases that were followed in the collection, measurement and analysis of data. The following subsections are included; research design, population of the study, sample size, data collection tools, data analysis techniques and data validity and reliability

3.2 Research Design

This study made use of descriptive survey design since its flexible and it enabled the researcher to utilize elements of both quantitative and qualitative research methodologies that offer an avid and apt description of the effect of derivative markets in Kenya.

3.3 Population

The study was conducted on all the 39 non-financial firms listed at the NSE and the questionnaires were distributed to the selected representatives in each firm. A census approach was used and all the representatives of the entire population (the respondents) were targeted.

3.4 Sample

Using purposive sampling technique, the questionnaires were distributed to head of finance, risk departments or equivalent in all the 39 firms. The concentration was in finance departments due to the quality of information they possess about derivatives.

3.5 Data collection

The primary data was collected with structured questionnaires. The head of finance departments were requested to fill in the questionnaires which contained both closed and open-ended questions to extract accurate information from the respondents. A “drop-and-pick latter” approach was employed to collect data from finance managers in various institutions. This enabled the researcher in assisting the respondents in case of any issues in filling the questionnaires and ensuring high response rates.

3.6 Analysis

On receiving the questionnaires from the respondents, the data was checked to ensure completeness and consistency. The quantitative data collected were validated, edited and coded and then analyzed using descriptive statistics such as percentage, frequencies and means. The data presentation techniques such as tables, charts and diagrams were used. Quantitative data helped the researcher to obtain detailed information which enabled in coming out with useful conclusions and recommendations on factors influencing development of a derivatives market in Kenya. The data was analyzed using statistical package for social sciences (SPSS) software.

3.7 Data Validity and Reliability

Before actual data collection, a pilot study was done on 10 firms not listed at the NSE to determine the validity and reliability of the research instruments. Also, the questionnaire underwent a test run to ensure effective data capture and reliability before the official roll out.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter discusses the analysis of data and the findings thereof. Apoyo (2011) defines data analysis as the process of reducing large amount of collected data, to data that addresses the initial proposition of the study. The research findings relate to the research objectives that guided the study. The analysis is based on research questions as identified in the study and then analyzed using SPSS version 20. The results have been presented in form of tables, charts and graphs.

4.1.1 Response Rate

The study had targeted 39 respondents who were from the NSE, 31 responses were received and thus representing 79.5% response rate. This formed the basis for the analysis presented in this chapter.

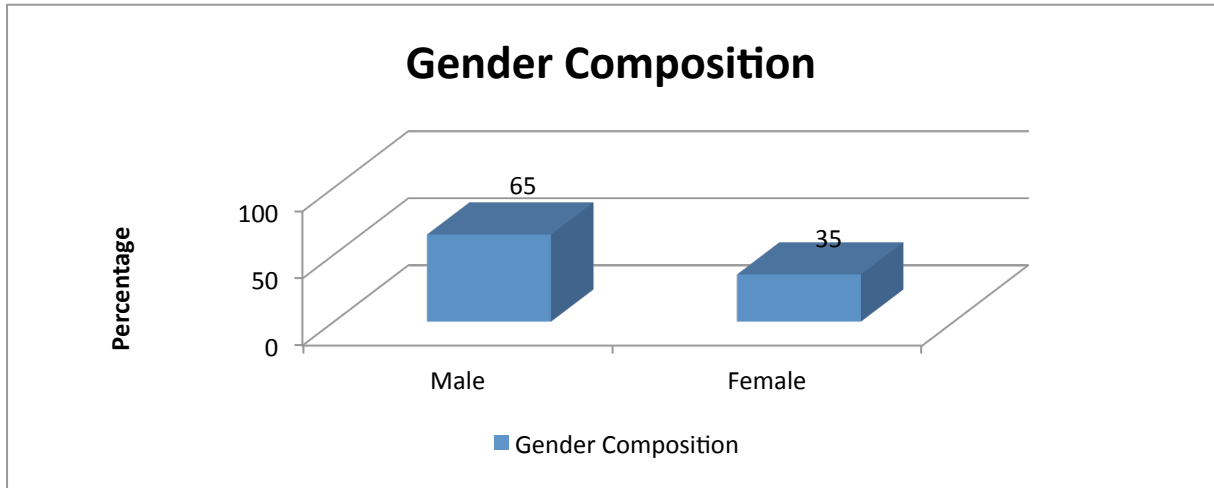
4.2 Demographic Information

This section presents the demographic characteristics of the respondent surveyed. In particular, this section presents the gender composition, age of the respondents, academic qualification and the shareholding structure of the companies covered in the study.

4.2.1 Gender Composition

Data on gender was collected from 31 respondents, the data was analyzed and the outcome was presented on Figure 4.1.

Figure 4.1 Gender Composition of respondents

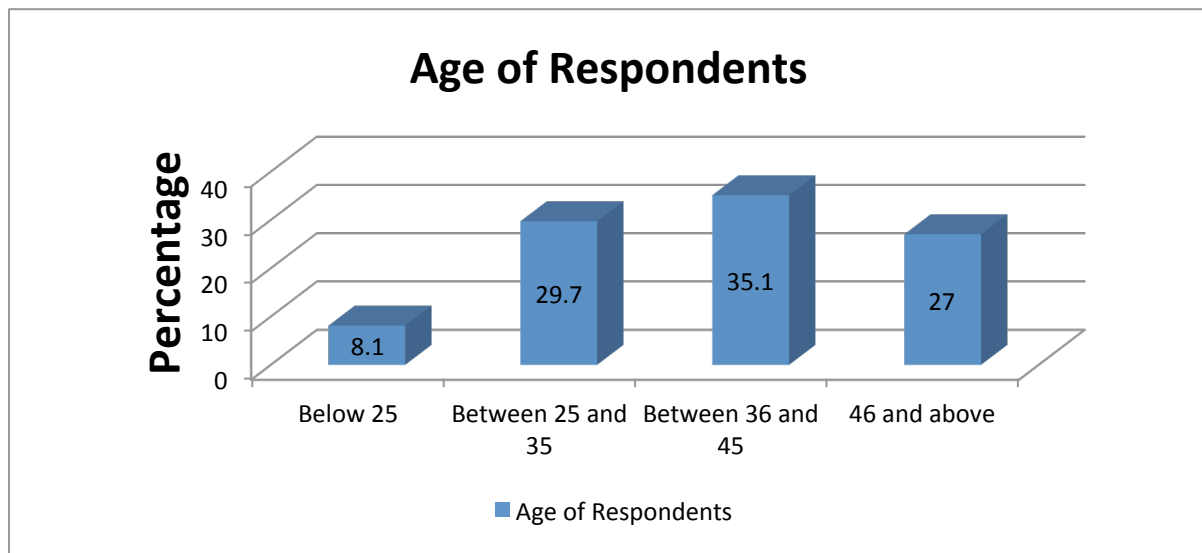


According to the findings, 65% of the respondents were male while 35% of the respondents were female. Generally, this information may be useful in drawing conclusions about the gender distribution in Finance field.

4.2.2 Age of respondents

The figure below presents the age composition or structure of the respondents. The findings indicate that majority of the respondents were between the age of 36 and 45 years, having had a representation of 35.1% which was followed closely by individuals between the age of 25 and 35 years accounting to 29.7% of the total respondents. The results further showed that those above 46 years had a representation of 27% whereas the least proportion of respondents were below 25 years accounting for 8.1% of the respondents.

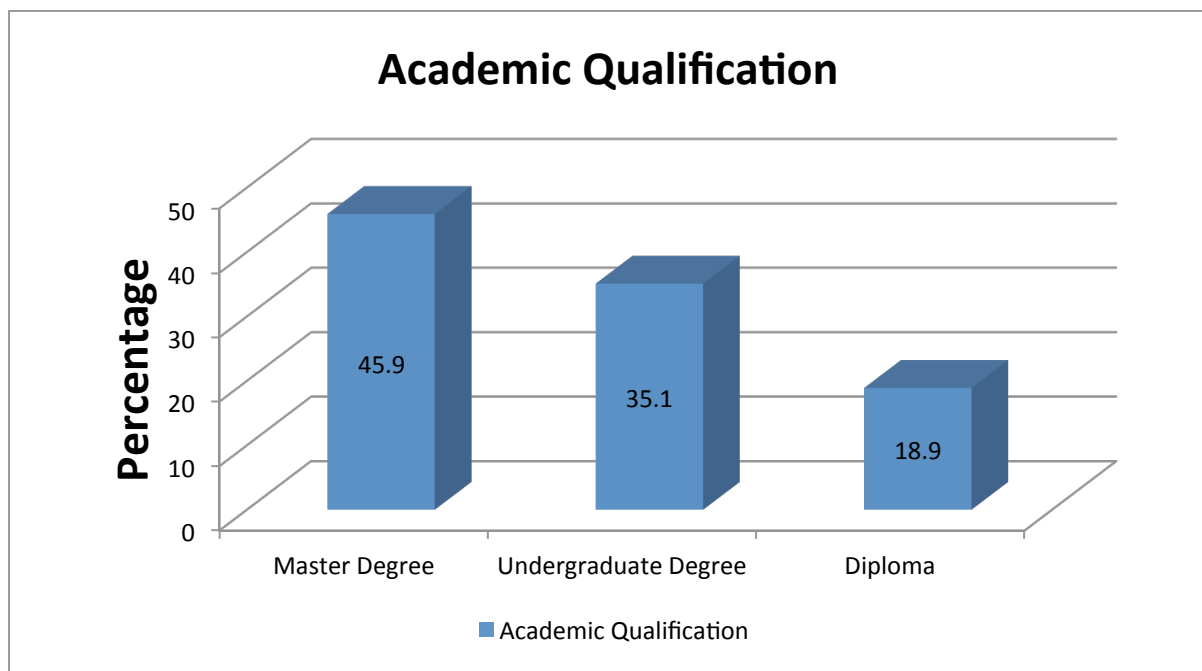
Figure 4.2 Age of respondents



4.2.3 Qualification of respondents

Among the respondents sampled, majority of them had Master degree and this accounted for 45.9% of the total respondents and was closely followed by respondents who had an Undergraduate Degree then followed by Diploma holders who accounted for 35.1% and 18.9% of all the respondents respectively.

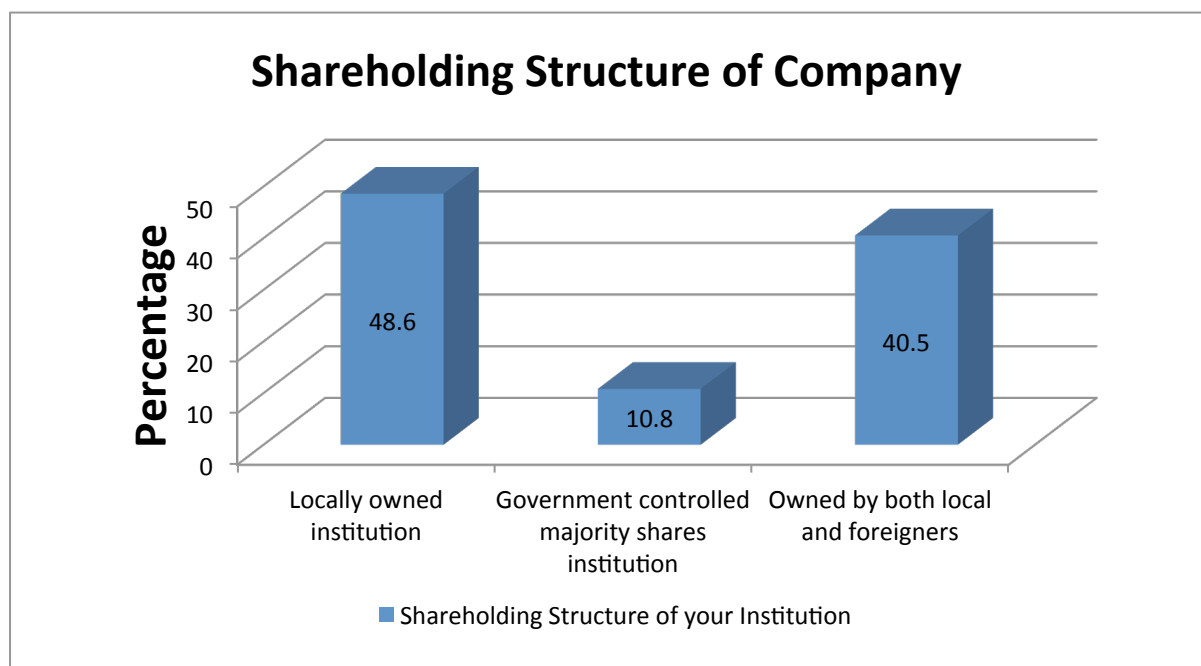
Figure 4.3 Qualification of Respondents



4.2.4 Firms Shareholding Structure

The shareholding structure of the non-financial companies examined in the study is presented in table 4.4 below. The figures indicate that majority of the companies are locally owned and this accounted for 48.6%. 40.5% of the companies are owned by both the locals as well as the foreigners. The results further indicated that 10.8% are owned by the government as they hold a big proportion of the firm's shares.

Figure 4.4 Shareholding Structures of the Companies



4.3 Financial Instruments

4.3.1 Introduction

The first objective of the study sought to find out the most suited derivative instruments for hedging risks in the Kenyan market. The data collected was analyzed and presented on table 4.1. Responses were measured using a five point Likert scale as follows: Always, Frequently, Seldom, In the past and Never. To consolidate and give presentation of the data, the study used the statistical functions of mean and standard deviation. The mean represents the average rating of all respondents to the derivatives commonly used while the corresponding standard deviation shows the range within which the individual ratings are from the mean.

Table 4.1 Major Financial Instruments used for Hedging Risks in Kenya

| Statement | Always | Frequently | Seldom | In the past | Never | Mean | Std Dev. |
|-------------------------|---------------|-------------------|---------------|--------------------|--------------|-------------|-----------------|
| Forwards | 18.20% | 28.60% | 23.10% | 10.00% | 20.00% | 4.06 | 1.04 |
| Futures | 6.20% | 28.60% | 25.10% | 6.00% | 34.00% | 3.97 | 1.08 |
| Options | 0.00% | 2.70% | 27.00% | 50.30% | 20.00% | 1.83 | 0.73 |
| Swaps | 8.10% | 6.80% | 8.10% | 27.00% | 50.00% | 2.17 | 0.65 |
| Warrants & Convertibles | 18.10% | 6.80% | 17.00% | 28.10% | 30.00% | 1.53 | 0.64 |
| Commodities | 16.20% | 9.50% | 16.20% | 18.10% | 40.00% | 1.47 | 0.59 |

Analysis of the research data collected indicates that derivatives are used by most companies in Kenya. As seen in Table 4.1, Forwards is the most utilized technique with a mean score of 4.06. Its closely followed by Futures (Mean score 3.97), Swaps (mean score 2.17), Options (mean score 1.8), Warranties and convertibles (mean score 1.53), and Commodities (means score 1.47). This finding is in line with the finding of Ngugi, Njagi Kimani (2013) who also found that derivatives instruments commonly used by Kenyan companies were forwards and futures index.

4.3.2 Reason for Trading Derivatives

The study wished to identify why institutions use derivatives as shown below in table 4.2.

Table 4.2 Reasons for Trading Derivatives

| Statement | Frequency | Percent |
|-----------------|-----------|---------|
| Hedging | 14 | 45.9 |
| Speculation | 3 | 8.1 |
| Arbitrage | 3 | 10.8 |
| Risk Management | 3 | 10.8 |
| Liquidity | 8 | 24.3 |

The results as presented in table 4.2 indicates that majority of the companies use derivatives for hedging as indicated by a 45.9% of the respondents. The results further show that firms use derivatives for liquidity purposes and this is evidenced by a 24.3% of the respondents. From the results, it was also clear that firms least used derivatives for speculation, arbitrage and risk management as accounted by 8.1% and 10.8% of respondents respectively. These conclusions are at par with the survey findings of Masry (2006) that the most important reason for using derivatives is hedging (managing) the volatility in cash-flows.

4.3.3 Impact of Derivatives on Company's Profit Margin

The results in table 4.3 capture the impact of derivatives among companies listed at the NSE.

Table 4.3 Impact of Derivatives on Company's Profit Margin

| Statement | Frequency | Percent |
|------------|-----------|---------|
| Positively | 17 | 54.1 |
| Negatively | 14 | 45.9 |

The findings indicated that 54.1% of the respondents agreed that the use of derivatives had positively impacted on their profit margins while 45.9% of the respondents indicated that derivatives had negatively impacted their profit margins.

4.3.4 Possible Risks Inherent to the Firm

Data relating to various risks experienced by firms was collected and the analysis presented in table in table 4.4.

Table 4.4 Risks Inherent to the Firm

| Risks | Frequency | Percent |
|-----------------------|------------------|----------------|
| Transaction Risk | 3 | 9.9 |
| Foreign Currency Risk | 20 | 65.1 |
| Interest Rate Risk | 6 | 19.2 |
| Commodity Risk | 2 | 5.8 |

The analyzed data show that 65.1% Of the respondents indicated that foreign currency is their major risk followed by interest rate risk with 19.2%. Transaction risks and commodity risks were minimal with a respondent of 9.9% and 5.8% respectively.

4.3.5 Risks Evaluation Techniques

Respondents gave response on the how they analyze risks as presented below in table 4.5.

Table 4.5 Risks Evaluation Techniques

| Strategy | Frequency | Percent |
|------------------------------------|------------------|----------------|
| Perform Attribution Analysis | 1 | 4 |
| Market indicators | 25 | 80 |
| Project liabilities | 3 | 10 |
| Modeled Acturial Software Packages | 2 | 6 |

This question was poorly answered as many respondents did not understand how the risks were measured but many respondents were relying on market indicators such as movement in exchange rates and interest rates.

4.3.6 Challenges faced by Derivatives users in Kenya

The second study's objective was to identify the challenges faced by the non-financial companies in use of derivatives as indicated in table 4.6. To consolidate and give presentation of the data, the study used the statistical functions of mean and standard deviation.

Table 4.6 Challenges Encountered in the use of Derivatives

| Statement | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std Dev |
|--|--------------------------|-----------------|----------------|--------------|-----------------------|-------------|----------------|
| Derivatives are complex, high tech financial products. And are difficult to value. | 0.00% | 0.00% | 2.70% | 97.30% | 0.00% | 3.03 | 0.77 |
| Only large multinational corporations and banks have a purpose for using derivatives. | 0.00% | 8.10% | 27.00% | 64.90% | 0.00% | 2.31 | 0.75 |
| Lack of excellent trading skills and experience. | 2.70% | 38.10% | 35.10% | 19.70% | 14.30% | 2.83 | 0.74 |
| Absence of organized markets. | 0.00% | 15.30% | 0.00% | 84.50% | 0.00% | 1.25 | 0.44 |
| High costs associated with hedging and accounting treatment issues. | 0.00% | 8.10% | 27.00% | 64.90% | 0.00% | 1.94 | 0.53 |
| Failure of management in implementing and carrying out staff training on derivatives instruments | 2.70% | 8.10% | 35.10% | 29.70% | 24.30% | 1.75 | 0.77 |
| The absence of a formal policy in place. | 0.00% | 15.00% | 2.70% | 83.30% | 0.00% | 1.00 | 0.00 |
| Total | | | | | | 2.02 | 0.57 |

According to the findings, the respondents indicated that derivatives are complex high tech financial products and as a result they are difficult to value thus limiting their use (mean score 3.03). This is in line with the finding of Louwers, Ramsay, Sinason and Strawser (2007) who also asserted that, given the complexity of derivatives managers have to involve specialists to assist in the auditing and valuing derivatives.

The results further indicated that lack of an organized market was a hindrance in the use of derivatives by companies followed closely by the notion that large multinational corporations

and banks have a purpose of using derivatives and thus the firm size influences the use of derivatives with mean score of 2.83 and 2.31 respectively.

Other challenges include the high costs usually associated with hedging and accounting treatment issues, failure of the management in implementing and carrying out staff training on derivative use and lack of a formal policy with mean score of 1.94, 1.75 and 1.00 respectively

4.3.7 Counter Measures to Address Derivative use Challenges.

The third objective sought to establish the countermeasures implemented in addressing challenges facing derivatives users. The responses were measured using five point Likert scale as shown below.

Table 4.7 Measures towards Addressing Derivative Use Challenges

| Statement | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std Dev |
|---|--------------------------|-----------------|----------------|--------------|-----------------------|-------------|----------------|
| Diffuse information to small-medium sized firms about use of derivative instruments in risk management. | 0.00% | 8.10% | 27.00% | 64.90% | 0.00% | 3.97 | 0.77 |
| Need for increased transparency of derivatives and hedging activities in the financial reports. | 2.70% | 8.10% | 35.10% | 29.70% | 24.30% | 3.97 | 0.77 |
| Register the firm with regulatory authorities such Security and Exchange Commission as an investment adviser. | 0.00% | 0.00% | 2.70% | 97.30% | 0.00% | 3.97 | 0.77 |
| Recommending the need of staff training on derivatives. | 0.00% | 8.10% | 27.00% | 64.90% | 0.00% | 3.97 | 0.77 |
| Have knowledgeable and reputable brokers. | 2.70% | 8.10% | 35.10% | 29.70% | 24.30% | 2.81 | 0.79 |
| Carrying out reviews of legal and regulatory policies to ensure compliance to avoid losses. | 2.70% | 8.10% | 15.60% | 49.20% | 24.30% | 3.17 | 1.00 |
| Use modern technology to fasten the clearing process. | 0.00% | 0.00% | 2.70% | 97.30% | 0.00% | 4.00 | 0.76 |
| Total | | | | | | 4.00 | 0.71 |

According to the findings, the respondents indicated that in order to address these challenges companies should diffuse information to small-medium sized firms about use of derivative instruments in risk management, increased transparency in reporting derivatives and hedging activities in the financial reports, companies to register with regulatory authorities such Security and Exchange Commission as an investment advise and need to carry out staff training on derivatives and seeking the expertise of knowledgeable and reputable brokers as shown by a mean score of 3.97. Finally, companies should carry out reviews of legal and regulatory policies to ensure compliance to avoid losses and use modern technology to fasten the clearing process as shown by mean score of 3.14 and 4.00 respectively.

4.3.7.1 Regression Analysis

In this study, a multiple regression analysis was conducted to test the influence among predictor variables. The research used Statistical Package for Social Sciences (SPSS V 20.0) to code, enter and compute the measurements of the multiple regressions.

Table 4.8: Model Summary

| Model | R | R Square | Adjusted R Square | Standard Error of the Estimate |
|---|-------|----------|-------------------|--------------------------------|
| 1 | 0.763 | 0.746 | 0.578 | 0.1076 |
| a. Predictors (Constant): Information, Transparency, Skills, Regulations and Technology | | | | |

R-Square (coefficient of determination) is a commonly used statistic to evaluate model fit. R-square is 1 minus the ratio of residual variability. The adjusted R^2 , also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. Table 4.8 shows that 74.6% of attracting derivatives usage could be attributed to the combined effect of the predictor variables.

Table 4.9: ANOVA (Analysis of Variance)

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|------------|----------------|----|-------------|-------|-------------------|
| Regression | 821.593 | 4 | 205.398 | 20.24 | .000 ^a |
| Residual | 324.723 | 27 | 10.15 | | |
| Total | 1146.316 | 31 | | | |

a. Predictors (Constant): Information, Transparency, Skills, Regulations and Technology

b. Dependent Variable: Derivative usage

Table 4.9 shows that the residual sum of squares (the sum of squared deviations from the least squares line) is 324.723, while the total sum of squares (the sum of squared deviations from the mean) is 1146.316. The probability value of 0.001 indicates that the regression relationship was highly significant in predicting how Information, Transparency, Skills, Regulations and Technology Support led to increased derivatives use. The F critical at 5% level of significance was 3.671 since F calculated is greater than the F critical (value = 20.24), this shows that the overall model was significant.

Table 4.10: Estimated Coefficients

| Model | Unstandardized coefficients(B) | p-Value |
|---------------------------------------|--------------------------------|--------------|
| Const. | 18.79 | 3.25e-09 *** |
| Information | 0.708 | 0.0133 *** |
| Transparency | 0.642 | 0.0395 *** |
| Skills | 0.706 | 0.0236 *** |
| Regulations and Technology support | 0.710 | 0.0154 *** |

- * Significant at 1%
- ** Significant at 5%
- *** Significant at 10%

The “coefficients” on Table 4.10 provides the regression equations. Under “unstandardized coefficients,” the “Constant” (18.79) is the “a” coefficient. The remaining values in this column are the “b” coefficients. Rewriting this in standard algebraic form, the unstandardized regression equation is:

$$DU = 18.79 + 0.708 I + 0.642 TR + 0.706 S + 0.710 RT + e$$

Where DU is Derivatives Usage, I is information, TR is transparency, S is skill and RT is Regulation and technology support.

A unit change in information will lead to a 0.708 change in derivatives usage. A unit change in transparency will lead to a 0.642 change in derivatives usage. A unit change in skills will lead to a 0.706 change in derivatives usage while a unit change in the regulations and technology support will lead to a 0.710 change in derivatives usage.

Table 4.10 shows that information, transparency, skills and regulations and technology support at 1%, 5% and 10% level of significance, they are significant in explaining the variations in derivatives usage.

4.3.8 Impact of Derivatives on the Kenyan Economy

Table 4.11 below shows the respondents perceptions on the impact of derivatives use on the Kenyan economy. Majority of the respondents largely agreed that derivatives would influence the macro economic and structural policies. For instance the respondents agreed that the use of derivatives will largely increase foreign exchange reserves, facilitate cross border capital flows and will also improve the GDP of the country. Only a few of the respondents disagreed that the derivatives can diminish the ultimate control that the monetary policy has over the levels of inflation with mean score of 2.39 as well as derivatives cause increased volatility in interest rates and exchange rates (mean score 2.52)

Table 4.11 Impact of Derivatives on the Kenyan Economy

| Statement | Mean | Std dev. |
|---|-------------|-----------------|
| Derivatives can diminish the ultimate control that the monetary policy has over the levels of inflation | 2.39 | 1.145 |
| Derivatives cause increased volatility in interest rates and exchange rates | 2.52 | 1.151 |
| Derivatives trading will increase the levels of foreign exchange reserves | 3.74 | 0.773 |
| Derivatives will facilitate cross border capital flows | 4.13 | 0.697 |
| Trading on derivatives will improve the GDP of the country | 4.45 | 0.568 |

4.4 Summary and Interpretation of the Findings

4.4.1 Summary

This study has investigated the general research problem of the effect of financial innovations strategies on risk management by non-financial institutions in Kenya. The study applied a multiple regression model to highlight the measures needed to be addressed to attract derivatives usage in Kenya. There was a significant positive relationship between derivatives usage and improvement of risk management techniques, which is consistent with the results of hedging by Allayannis & Weston (2001) and Carter et al. (2006).

In conclusion, the findings of this study empirically give the answer to the main research question and test the relation between derivatives usage and risk management.

4.4.2 Interpretation

This research was conducted on 39 firms and the response rate achieved was 79.5%. Although the entire population was targeted, 31 respondents did fill the questionnaire.

According to the findings, the finance field was dominated by male (65%) and majority of the respondents were aged between 36-45 years and they had a Master degree which accounted for 45.9%.

The study found out that the most frequently used derivatives were forwards followed closely by futures, swaps, options, warrants & convertibles and lastly commodities as indicated by 38.8%, 34.8%, 3.1%, 2.7%, 9.6% and 11% of the respondents respectively. Most institutions use derivatives for hedging purposes as indicated by a 45.9% of the respondents, 24.3% for liquidity reasons and also for speculation, arbitrage and risk management as accounted by 8.1% and 10.8% of respondents respectively. Foreign risk is the major reason that company's hedge which accounted for 65.1% of the respondents followed by interest rate risks which

accounted for 19.2%. 17 of the firms agreed that derivatives had positively impacted into the firms profits while 14 firms had been negatively impacted by derivatives usage.

The study also pointed out that firms encountered challenges such as complexity and high costs associated with use of derivatives and lack of adequate knowledge by users of derivatives to a great extent. The study established that the common approaches used to curb the challenges include diffusion of information to firms and increased transparency in reporting derivatives and hedging activities.

The study also revealed that derivatives largely increase foreign exchange reserves, facilitate cross border capital flows and also improve the GDP of the country.

4.4.3 Major Findings

Investors mainly invest in forward markets, future index, swaps, options, warranties & convertibles and commodity derivatives respectively. This finding is similar to the finding of Sandeep et al. (2008) who concluded that maximum trading is done in futures and forwards and also the findings of P. Ganesan (2004) who concluded that futures are simpler than options.

Investors use equity derivatives for hedging followed by liquidity, risk management, arbitrage and for speculation purposes respectively. These findings are similar to the research objectives of P. Ganesan et al. (2004) who found that hedging is the main reason that investors trade in derivatives market.

The study also found that most institutions prefer having documented policy for derivatives. This would help managers to manage risks inherent to the firm. Manoj Anand et al. (2008) mentioned in his survey analysis that most of the respondents firms have documented risk management policies.

4.4.4 Comparison of findings with Previous studies

The aim of this study was not only to fill an obvious gap in the finance literature, but also to improve where possible on previous research. Previous studies have sought to examine the impact of hedge funds and derivatives use by banks and multinational firms, however, these earlier studies have not addressed the issue of derivatives use by non-financial firms and the impact it will have in the economy. This study has, therefore, identified how beneficial it will be if industries such as agriculture could embrace the use of derivatives.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Derivatives are the major icon among risk management practices. Firms usually use derivatives to hedge their foreign exchange and interest rate risk. This study aimed to examine the effect of financial innovation techniques on risk management by non-financial institutions in Kenya. The objectives of this study were to determine the effect of financial innovation techniques on risk management by non-financial institutions in Kenya, challenges encountered in the use of these innovations, measures towards addressing these challenges and the impact of derivatives markets on the Kenyan economy.

The study established that non-financial firms in Kenya face myriad financial risks ranging from foreign exchange risks, interest rate risks and commodity price risks in order of severity. These firms have thus practiced use of derivatives hedging practices to curb these risks. The prevalent derivative instruments being forward contracts followed by future index, swaps and options. Although challenges such as complexity in use of derivatives, lack of skills and lack of organized markets are facing derivative users, countermeasures have been put in place to ensure these challenges are eliminated.

In view of recent global financial crisis, firms should embraced derivatives usage as a risk management tool. Firms should have written policies and also clear objectives on derivatives usage. In light of these reasons, the investigation of the effect of financial innovation on risk management has become an issue of considerable interest worldwide.

5.2 Conclusions

Over the last few years, the use of derivatives as a tool to mitigate and control risk has expanded significantly and the industry is poised for even more growth as individuals and institutional investors become more attuned to its risks and rewards.

Despite challenges such as complexity in the use of derivatives, knowledge of derivatives, difficulty in pricing, valuing derivatives and accounting treatment of derivative, the efficacy of derivatives as a means of managing economic and other forms of risk remains widely accepted. Therefore, the government and corporate investors should address these challenges and lay down policy framework that will ensure that smooth running of the OTC derivative markets

Majority of Finance Managers believe that only banks and multinational firms use derivatives and this has resulted to them being under utilized in Kenya. The findings of this study are consistent with those of Nzuki (2010) who established that firms in Kenya under-hedge their financial risks; that is, their hedging practices are below the industry optimal. Also, Karp (2009) asserted that the level of derivative usage in Kenya is still low and not being exploited by firms and this makes shareholders lose billions of shillings owing to directors' failure to shop for appropriate hedging instruments or their imprudent choice of hedging. Therefore, information should be diffused to Small-Medium sized firms about the use of derivatives in risk management.

In the current economic environment, with uncertainty on the actual value of investment opportunities, it is interesting to observe what direction derivative markets in equities, fixed income and foreign currency will take and whether or not firms will keep setting standards in risk management going forward.

5.3 Policy Recommendations

In order to improve the derivatives market in Kenya, the study advocates for speedy establishment of regulatory framework applicable to forex and interest derivatives that would protect market participants. Also, transparency in the way of doing business and voluntary disclosure of information is also recommended to enhance confidence on investors.

The technology and business process framework needs to be set to manage risks relating to activities in derivatives market. The survey shows that only a few firms have softwares that measure risks. This means that most firms are not well versed on the kind of risks they are exposed to.

Educational programs on derivatives should be developed and undertaken in Kenya to demystify derivative trading and its accounting and valuation procedure. This would enable managers to manage the exposures and risks relating to activities in the derivatives market. Knowledge plays an important role when using derivatives as they are complex instruments.

The senior and top management of several corporate sectors need to undergo an orientation phase to familiarize themselves with the microstructure of the derivatives market (e.g options and swaps) to help them establish an appropriate governance framework for the derivatives market.

Agriculture being the main source of income in Kenya, commodity futures could be useful as agricultural products prices are volatile and are affected by seasonal factors. Agricultural Commodity Futures and Options are essentially a means of spreading risks and a source of obtaining price insurance.

5.4 Limitations of the study

This study was limited to lack of resources, time, funding and scope to the extent that there was non-response from some firms and thus a 100% response rate was not attained as had been perceived. The questionnaires were distributed to 39 firms but only 31 questionnaires were returned.

Because finance managers hold executive positions, they are always busy and any questionnaire can be limited to a 5-minute period and cannot be constructed to explore in-depth or complex issues relating to derivatives. As a result, the research findings are limited to only simplified factors and this results to failure to measure important variables.

Also, there was difficulty in getting access to the finance and risk managers of some firms who would help in providing the necessary information and as a result other officers within the firm were asked to respond on their behalf. Therefore, the reliability of the responses was minimized.

Lastly, the study relied largely on qualitative methodology of data collection and is therefore restrictive. Therefore, more of quantitative methodology of data collection should be undertaken in future to provide wider perspective to the present study.

5.5 Suggestions for Further Studies

To overcome the above limitations, primary data should be collected through in-depth interviews between the researcher and the respondents. This method of data collection is more reliable and can be used to explore complex issues of derivatives and to triangulate results of any quantitative survey may maximize research results.

As Kenya relies on Agricultural products, detailed research should be conducted on commodity derivatives as it will be fruitful to investors. Also, further regulatory reforms will help the commodity market grow faster.

Further studies can be done on the legality of financial derivatives in financial statements. Recently, concerns have arisen about the use of certain financial derivatives by taxpayers to avoid or evade tax obligations. Others use financial derivatives to lower their tax liabilities in ways that the courts have found improper.

There are numerous SMEs that import their products such as fertilizers, electronics and vehicles and are faced by foreign and interest rate risks. A further research can be conducted on the impact of derivatives use by Small to Medium enterprises in risk management. Other studies can focus on Non-Government organizations that are funded internationally and have significant foreign currency transactions.

Another suggested area for further study would be to consider the impact of derivatives use on the firm's financial performance as it is considered that the use of derivatives is likely to reduce the level of risk that the firm faces.

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APPENDIX ONE

Research Questionnaire

I am undertaking a research on The Effect of Financial Innovation Techniques on Risk management by Non-Financial Institutions in Kenya as part of my academic qualifying requirement. Your assistance, through completion of this questionnaire will be highly appreciated. Any information provided shall be confidential. Thank you in advance for taking the time to fill in the questionnaire.

COMPANYS'NAME:

SECTION A: DEMOGRAPHIC INFORMATION

1. Please tick to indicate your Gender.
Male()
Female.....()
2. Please tick the age bracket in years in which your age falls.
Below 25.....()
Between 25 and 35.....()
Between 36 and 45.....()
46 and above.....()
3. Please indicate your academic qualification.
Master Degree()
Undergraduate Degree.....()
Diploma()
Others [*Specify*]
4. What is the current shareholding structure of your Institution?
Locally owned institution.....()
Government controlled majority shares institution....()
Foreign owned but locally incorporated.....()
Foreign owned NOT locally incorporated.....()
Owned by both local and foreigners.....()

SECTION B: CORE QUESTIONS

5. Please tick to indicate the extent to which your institution uses the named derivatives instruments.

| Derivatives | Always | Frequently | Seldom | In the past | Never |
|--|----------|------------|----------|-------------|----------|
| | 1 | 2 | 3 | 4 | 5 |
| Forwards | | | | | |
| Futures | | | | | |
| Options | | | | | |
| Swaps | | | | | |
| Warrants & Convertibles | | | | | |
| Commodities | | | | | |
| Others [Specify and Rate accordingly] | | | | | |

6. What do you think is the main reason for trading on derivatives?

- Hedging.....()
- Speculation.....()
- Arbitrage.....()
- Risk Management.....()
- Liquidity.....()

7. Have the derivatives impacted your profit margins?

- Positively.....()
- Negatively.....()

8. What are the possible risks to the firm?

- Transaction Risk.....()
- Foreign Currency risk.....()
- Interest rate risk()
- Commodity risk.....()
- Others [Specify]()

9. How do your company evaluate the risks?

- Perform attribution analysis.....()
- Market indicators.....()
- Project liabilities()
- Use modeled actuarial software packages.....()

10. In your own opinion rank these challenges encountered while using derivatives instruments.

| Challenges Faced | Strongly Disagree | Disagree | Not Sure | Agree | Strongly Agree |
|--|--------------------------|-----------------|-----------------|--------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 |
| Derivatives are complex, high tech financial products. And are difficult to value. | | | | | |
| Only large multinational corporations and banks have a purpose for using derivatives. | | | | | |
| Lack of excellent trading skills and experience. | | | | | |
| Absence of organized markets. | | | | | |
| High costs associated with hedging and accounting treatment issues. | | | | | |
| Failure of management in implementing and carrying out staff training on derivatives instruments | | | | | |
| The absence of a formal policy in place. | | | | | |
| Others [Specify and Rate accordingly] | | | | | |

11. Please tick to indicate the strategies adopted by your firm to develop an organized derivative market in Kenya.

| Strategies | Strongly Disagree | Disagree | Not Sure | Agree | Strongly Agree |
|---|--------------------------|-----------------|-----------------|--------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 |
| Diffuse information to small-medium sized firms about use of derivative instruments in risk management. | | | | | |
| Need for increased transparency of derivatives and hedging activities in the financial reports. | | | | | |
| Register the firm with regulatory authorities such Security and Exchange Commission as an investment adviser. | | | | | |
| Recommending the need of staff training on derivatives. | | | | | |
| Have knowledgeable and reputable brokers. | | | | | |
| Carrying out reviews of legal and regulatory policies to ensure compliance to avoid losses. | | | | | |
| Use modern technology to fasten the clearing process. | | | | | |
| Others [Specify and Rate accordingly] | | | | | |

12. Please tick to indicate the likely impact of derivatives use on the Kenyan economy.

| Impacts | Strongly Disagree | Disagree | Not Sure | Agree | Strongly Agree |
|---|--------------------------|-----------------|-----------------|--------------|-----------------------|
| | 1 | 2 | 3 | 4 | 5 |
| Derivatives can diminish the ultimate control that the monetary policy has over the levels of inflation | | | | | |
| Derivatives cause increased volatility in interest rates and exchange rates | | | | | |
| Derivatives trading will increase the levels foreign exchange reserves | | | | | |
| Derivatives will lead to increased volatility in interest rates and exchange rate | | | | | |
| Derivatives will facilitate cross border capital flows | | | | | |
| Trading on derivatives will improve the GDP of the country | | | | | |
| Others <i>[Specify and Rate accordingly]</i> | | | | | |