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AN EXPLORATORY STUDY INTO THE INTRODUCTION OF A SUCCESSFUL DERIVATIVES MARKET IN KENYA

Nancy Angano Noreh

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School of Management and Commerce

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Name:NANCY NOREH.....

Signature:.....

Date:10/9/2014.....

Approval

The thesis of Nancy Angano Noreh was reviewed and approved by the following:

Dr. Freshia Mugo – Waweru

Senior Lecturer, School of Management and Commerce

Dr. David Wangombe

Dean, School of Management and Commerce

Prof. Ruth Kiraka

Dean, School of Graduate Studies

ABSTRACT

The purpose of this study was to explore the factors that contribute to the success of a derivatives exchange and to establish whether these factors exist in Kenya which hopes to introduce its own derivatives exchange in the near future. Primary data was collected from capital market participants who included: stock brokers, investment banks, fund managers, investment advisors and regulators through the use of questionnaires; and secondary data from statistical databanks. A comparative study was used to analyse the data by benchmarking the indicators that explain the factors in a successful market and comparing the situation existing in Kenya in light of them. Descriptive analysis was also used for the primary data. The study found that economic development, political stability, a developed capital market, the types of products traded, infrastructural systems, a legal and regulatory framework, education of market participants, and many and active investors were important factors for the success of a derivatives exchange. The study also found that Kenya was not yet ready to establish a derivatives exchange which would be considered to be successful. Although Kenya is not yet ready to establish a derivatives exchange, measures can be put in place to facilitate the process of getting ready. Economic development and political stability may not be changed as easily, however putting in place the required regulatory framework and infrastructural systems and encouraging greater capital market development can be embarked on. This paper contributes to the body of literature by documenting the factors necessary for establishing a successful derivatives exchange in Kenya.

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LIST OF ACRONYMS

CBK – Central Bank of Kenya

CDSC – Central Depository and Settlement Corporation

CMA – Capital Markets Authority

CPI – Consumer Price Index

EIU – Economist Intelligence Unit

FDI – Foreign Direct Inflows

FIA – Futures Industry Association

GBOT – Global Board of Trade

GDP – Gross Domestic product

IFRS – International Financial Reporting Standards

JSE – Johannesburg Stock Exchange

KASIB – Kenya Association of Stockbrokers and Investment Banks

KNBS – Kenya national Bureau of Statistics

NSE – Nairobi Securities Exchange

SRO – Self-Regulating Organization

WFE – World Federation of Exchanges

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CHAPTER 1: INTRODUCTION

1.1 Background

Derivative trading has been in existence informally for centuries, however organized trading started in 1848 with the Chicago Board of Trade (Chance, 1995). The Chicago Board of Trade (CBOT) standardized the quantities and qualities of the grains traded by farmers and merchants in 1865 and the first futures clearing house was formed in 1925. In 1972, the Chicago Mercantile Exchange created the International Monetary Market which allowed trading in currency futures (a non-commodity item). In 1973, the Chicago Board Options Exchange was established where call option contracts were first traded. Put option contracts were first traded on the exchange in 1977. Swaps began trading in the 1980's (Chance, 1995).

The World Federation of Exchanges has fifty four members from across the globe, however out of these only three exchanges, Johannesburg Stock Exchange, the Egyptian Exchange and the Stock Exchange of Mauritius are from the African region (Appendix 1). There are sixteen countries in Africa with stock exchanges and two regional stock exchanges that serve eight West African countries (Appendix 2). Out of these, only Johannesburg Stock Exchange in South Africa and the Global Board of Trade (GBOT) in Mauritius have successfully set up a derivatives market. According to the Africa Fixed Income and Derivatives Guidebook (2010), Egypt, Morocco and Zambia trade derivatives on a small scale but do not have fully established derivatives markets. A derivatives exchange is to be set up in Botswana which is expected to be a hub for pan African trading. However, derivative exchanges in Nigeria and Ghana have struggled to take off or to achieve appropriate scale (Africa Fixed Income Guide Book, African Development Bank, 2007).

According to the Africa Fixed Income and Derivatives Guidebook (2010), Kenya has had a limited number of interest rate swaps, cross currency swaps and currency forwards being traded. These are mainly used in the interbank market for overnight borrowing for liquidity management by commercial banks. However, this ability to manage risk does not trickle down to all in Kenya. Kenyan farmers experience losses due to price fluctuations (Ng'etich and Butunyi, 2011). At harvest time, prices drop to all time lows and the farmer ends up selling his produce at prices that cannot enable him to recoup his costs. In between harvests, the prices of the commodities are high but the farmer has nothing to sell because he did not have the facilities to store his produce to that time (Ng'etich and Butunyi, 2011).

One would ask: why have derivative exchanges? Derivative exchanges improve the allocation of resources, maintain efficient pricing and information flows, and act as a conduit for the transfer of risk both within and across countries (Tsetsekos and Varangis, 2000). Many African capital markets are characterized by volatile capital flows, shallow financial markets and inadequate access to finance (Adelegan, 2009). Derivative trading in African markets would help to increase their liquidity and provide an alternative to bank credit as a source of funding (Adelegan, 2009). It would help in managing a variety of risks stemming from inflation, foreign currency, interest rates among others and thus enhance economic efficiency (Fofana, 2001). It would also make foreign investments more attractive by providing a means of reducing foreign exchange risk, as well as stimulate domestic savings.

The following studies have been carried out on the characteristic factors necessary for a derivatives exchange to be successfully established: Tsetsekos and Varangis (2000) focused on economic development of the country, political stability and products traded; Jobst (2007) studied sound infrastructural systems and a strong legal and regulatory framework; Tsetsekos and Varangis (1997) also wrote about developed

capital markets and a detailed feasibility study; while Unis (1998) focused on educating market participants and large and active investors.

According to Mugo (2009), the benchmark of a successful derivatives exchange was the number of years the exchange had been in operation which should be more than fourteen years (Tsetsekos and Varangis, 1997) and the choice of products together with the volumes traded (Black, 1986).

1.2 Problem Statement

Kenya, like any other emerging market, would benefit from the improved allocation of resources, maintenance of efficient pricing and transfer of risk that derivatives trading would bring (Tsetsekos and Varangis, 2000). Farmers could manage their cash flows and income by getting into contracts at any time between harvests to sell their produce or hedge against unfavourable market conditions. Traders would do the same by buying products at prices that are suitable to them at times that are not peak. In the midst of these, there would also be speculators who would be out to profit from market conditions and arbitrageurs who would be taking advantage of price differentials (Ng'etich and Butunyi, 2011). Recognizing the ability of derivatives to address price volatility of commodities, the Minister of Finance of Kenya in a policy pronouncement during the 2010 Budget speech directed that a futures exchange should be set up (Ministry of Finance Budget Speech, 2010). In addition to this, the Capital Markets Authority has been working towards promoting new products such as derivatives in an effort to achieve its objective of deepening the capital markets of Kenya, and even constituted a committee to look into this introduction (Capital Markets Authority Press Center, 2012).

Stock markets in general are also exposed to an element of financial risk as they are influenced by changes in interest rates, exchange rates and the movement of global funds causing the investors to demand for a tool to manage this risk, which comes in the

form of a derivatives exchange (Yu-Kyung and Mugo-Waweru, 2012). However, looking at Kenya's requirement for a derivatives exchange from only a need perspective (demand-supply angle) is not enough. A detailed feasibility study needs to be carried out to determine whether the establishment of a derivatives exchange in Kenya will be a probable success (Tsetsekos and Varangis, 1997). Given the criteria for setting up a thriving derivatives exchange, how likely is it that Kenya will succeed if she introduces an exchange this year (2013)? This was the focus of this study.

1.3 Objectives

The general aim of this study was to determine whether Kenya was prepared to establish a successful derivatives exchange with reference to the factors of a successful derivatives market.

The specific objectives of this study were to:

1. Examine the critical factors that enhance the success of a derivatives exchange.
2. Determine how prepared Kenya is to introduce a derivatives exchange based on the factors of success.

1.4 Research Questions

1. What are the critical factors that enhance the success of a derivatives exchange?
2. How prepared is Kenya to introduce a successful derivatives exchange?

1.5 Justification

This study and its findings will benefit the following:

- 1.5.1 The Capital Markets Authority (CMA)

The CMA, which is in the process of setting up a derivatives exchange in Kenya, will find the analysis of the necessary factors of a derivatives exchange useful in determining Kenya's readiness to establish its own exchange.

1.5.2 Other capital market players

Investors, stock brokers and investment banks will benefit from information given in this study as they will become more knowledgeable on derivative exchanges which will be very important as they will form the market participants of the exchange when it is set up.

1.5.3 Researchers

Other researchers will also benefit from this study when they carry out their own research on a related topic.

1.6 Scope of the Study

This study helped to determine whether the factors of success in establishing a derivatives exchange in Kenya had been achieved. The study was limited to capital market participants who include: stock brokers, investment bank, investment advisors, fund manager and regulators. The period under investigation was the five year period prior to an exchange being established (in this case 2006 to 2010).

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter focused on previous studies done on establishing derivative exchanges. Before introducing a derivatives exchange in a country, it is useful to know what good the exchange will bring. In light of this, the chapter discussed the benefits of an exchange to an emerging market. It then studied the determinants of establishing a successful exchange and finally, it analysed the Kenyan context in view of these determinants.

2.2 Benefits of a Derivatives Exchange to an Emerging Market

Derivatives meet a crucial economic need by facilitating risk management, and enabling price discovery. They also provide hedging and low-cost arbitrage opportunities. These benefits, amongst others, are explained in greater detail below:

2.2.1 Price Discovery

Price discovery occurs when an asset is traded and new information about its value is incorporated into its price (Karagozoglu, 2006). By trading in derivatives, market participants form expectations about underlying asset prices and manage the risks associated with price changes. Jobst (2008) concurs when he states that derivatives help to discover the fair market price of certain assets in instances of high transaction costs, poor liquidity due to the dispersion of markets, limited asset supply or the conglomeration of many risks into one whole asset.

Peck (1985) demonstrates both theoretically and empirically the direct effect futures markets have on commodity prices, and their indirect impact on production, consumption and storage decisions. She also provides empirical evidence that seasonal and annual commodity prices are more stable in economies with futures markets and these markets fulfill an economic role by decreasing price volatility.

Price discovery is most efficient if trading is motivated by both speculation and institutional hedging (Jobst, 2008).

2.2.2 Risk Management

According to Jobst (2008), derivatives facilitate greater diversification of investments and enables risk to be transferred across national financial systems. This risk management makes capital markets more efficient, increases market capitalization and liquidity in the underlying cash markets. Given the high level of economic and financial risks faced by market participants and investors in emerging countries, derivatives markets are expected to contribute to a country's economic development by making these risks manageable (Karagozoglu, 2006).

2.2.3 Other Benefits

Silber (1985) and Jobst (2008) indicate that increased liquidity and risk reduction facilities available to portfolio managers and other investors reduce the cost of capital to businesses, which ultimately translates into greater capital formation for the economy as a whole. Silber (1985) indicates that financial futures considerably reduce cost of transacting, increase market liquidity (trading volume) and facilitate risk reduction. Tsetsekos and Varangis (1997) also find that derivative exchanges facilitate more publicly available information, improved transmission of price and other market related information, improved credit systems, more responsive capital markets, higher uniformity in repayment rules and market surveillance, reduced transaction costs, more accurate forward prices and better allocation of resources.

2.3 Factors that Determine the Success of a Derivatives Exchange

Jobst (2007), Tsetsekos and Varangis (1997, 2000), and Unis (1998) discussed several necessary factors that are required before a derivatives exchange is established which determine its success or failure. The determinants are discussed below:

2.3.1 Economic Development

In a study on the structure of derivatives exchanges, Tsetsekos and Varangis (1997) used a country's Gross Domestic Product (GDP), Consumer price index, interest rates and government bond yields to measure economic development. Inflation rates and unemployment rates can also be used as measures. These measures directly affect the development of a country's capital markets which in turn influence the growth and development of a derivatives market. For instance, a high GDP indicates a high market value of a country's final goods and services which translates into a strong economy which has a positive influence on the country's capital market. Yu-Kyung and Waweru (2012) infer that high and growing GDP levels, low inflation, unemployment and interest rates are good indicators for a ready economy that would support a derivatives exchange.

2.3.2 Political Stability

Pin and Marcel (2008) found that political instability negatively affects growth, while changes in a country's political climate can impact negatively on a foreign operation's viability and profitability which lowers foreign investments in the country. In addition, political instability leads to uncertainty in the future of the country prompting most investors to keep off from investing in the country or to withdraw their investments. Government intervention, such as price controls, can also interfere with futures trading (Black, 1986). Yu-Kyung and Mugo-Waweru (2012) suggested that the level of foreign direct investments (FDI) net inflows to a country, the number of tourist arrivals and change of presidents can be used as measures of the political climate. Other measures include: the Economist Intelligence Unit political instability index, and the Bertelsmann Stiftung's Transformation Index which has the Status Index that ranks countries according to their state of democracy and market economy and the Management Index that ranks countries according to their leadership's political management performance.

2.3.3 Infrastructural Systems

According to Tsetsekos and Varangis (1997), a derivatives exchange is only complete when there is supporting infrastructure. This infrastructure includes: the management of order flow, price stabilization features or circuit breakers introduced in the market, market-making mechanisms, settlement and clearing procedures, exchange monitoring, and control and enforcement functions. The presence of these factors, act as a measure of a good system and foster transparent and efficient operations of an exchange, thus increasing its chance of success (Mugo, 2009).

Jobst (2008) also argued that systemic risk is reduced when trading occurs in a well-structured and formally regulated exchange that imposes appropriate margin requirements and position limits, administers centralized clearing and settlement, engages in vigilant market surveillance, mutualizes risks through loss-sharing arrangements, and enforces capital deposits and excess-of-loss insurance. He further observed that derivatives trading without central clearing counterparties (CCP) and full disclosure requirements increases potential vulnerabilities and may trigger system-wide failures.

2.3.4 Legal and Regulatory Framework

Purfield et al (2006) postulated that transparent derivative markets governed by orderly market and trading rules are generally deeper, more liquid and more efficient in their price settings activities than unregulated markets which are characterized by the absence of measures that guarantee collective interest in market stability. Jobst (2008) also observes that the impact of shocks to financial stability is more pronounced where market forces and participants are left to their own devices.

According to Jobst (2007) legal and regulatory frameworks governing derivative markets should be based on: firstly, solid accounting rules and the alignment of local accounting standards to International Financial Reporting Standards (IFRS); secondly, specific derivative laws; thirdly, full balance sheet disclosure requirements and market monitoring through self-regulating organizations (SROs); fourthly, capital rules on

positions and transactions; and fifthly, a tax environment that creates a level playing field for all cash and derivative trading.

The World Federation of Exchanges (WFE) criteria for regulatory standards can be used as measures for a regulatory framework. They include: regulations on market access and participation; listing by companies; timely, relevant and continuous disclosure of information related to listed companies; trading; order rules for entry, display and execution which clearly establishes priority; transparency and supervision of market activities; regulatory oversight and enforcement; clearing of trades; settlement of payment and transfer of title; enforcement of rules; emergency and summary powers; and business continuity planning.

2.3.5 Developed Capital Markets

Black (1986) observed that derivatives trading thrives where there is a fair and competitive market with a sufficiently large supply and demand for various products which make it difficult for a few parties to dominate the market. The development of successful futures markets requires a certain level of economic development in a given country. So it is crucial, although not easy, to identify the level of development at which the introduction of a derivatives market will complement the development of the financial infrastructure of a country (Karagozoglu, 2006). Sandor (1973) also asserted that, among others, price variability of the commodity, existence of a viable cash market, and proper contract specifications are prerequisites for a successful futures market.

According to Yu-Kyung and Mugo-Waweru (2012), the existing equities market should be large and liquid to attract many participants and increase the trading volume. The level of development of the bond market is not as critical. The level of the development of the capital market and specifically the equities market can be measured by the market capitalization, the trading volumes and the number of listed companies (Mugo, 2009).

2.3.6 Products Traded

Black (1986) defined a successful product as one that has a high trading volume, attracts a lot of trading interest and draws many people to trade. Successful contracts (products) are those that facilitate hedging as well as price discovery (Karagozoglu, 2006). The issue of contract size in optimal contract design requires a careful consideration of the trade-off between volume and transaction costs. Too small a contract size increases the costs of transacting, whereas too large a contract size makes it prohibitive for some traders to enter the market. Thus, contract size is an essential element of successful futures contract design. Contract size and margin requirements are particularly important contract specific factors that have the potential to amplify trading volume. In general, it can be argued that for a given demand for the futures contract, the smaller the contract size and the lower the margin requirements are, the larger trading volume will be (Karagozoglu, 2006). Sandor and Sosin (1983) indicated that success of new futures contracts tend to depend on their use by both commercial (hedging) and speculative interests.

According to Black (1986), a commodity qualified for futures trading if it had the following attributes: homogeneity of a given product, the commodity has frequent price fluctuations with wide amplitude (volatility), large supply and demand for the commodity, supply of the commodity must flow naturally to the market through a competitive cash market and low delivery costs, and there must be breakdown in the existing pattern of forward contracting. Yu-Kyung and Mugo-Waweru (2012) also conclude that contracts are likely to succeed when the underlying market is large and is characterized by volatile prices.

2.3.7 Education of Market Participants

Sir Francis Bacon said that 'knowledge is power'. The more one knows about derivatives and their exchanges, the better one is able to make use of that knowledge to their

advantage. So education that brings knowledge about a derivatives exchange is key in making its establishment a success. According to Unis (1998), the education given should range from the basic concepts of derivatives to international best practices and should be carried out by the stock exchange in conjunction with other market participants.

2.3.8 Large and Active Investor Population

A large and active population of investors comprising of local and foreign as well as retail and institutional investors is critical for large trading volumes which are vital for a successful derivatives exchange (Yu-Kyung and Mugo-Waweru, 2012). Investor confidence also plays part in this success. In a different vein, hedging which refers to risk management that reduces return volatility, and speculation which refers to risk management that increases return volatility also have a part to play (Hentschel and Kothari, 2001). Gray (1966) asserted that hedgers rely on speculators to absorb the excess demand and supply of contracts that would otherwise create large price biases. To illustrate this Ciner, Karagozoglu and Kim (2006) concluded based on their results that there was little support for hedging-motivated trades being the cause of the KOSPI 200 Index futures contract's success. They also indicated that activity in Korean derivatives is driven primarily by speculative trading by retail investors thus inferring the importance of speculators and retail investors in a derivatives market.

2.3.9 Feasibility Study

Tsetsekos and Varangis (2000) advised that policy makers in a country should always begin with a feasibility analysis when considering establishing a derivatives exchange. This analysis investigates the degree to which a country meets the earlier discussed determinants, identifying areas of weaknesses and formulating plans to address these.

When the feasibility study is done, then the products to be traded are selected and the exchange's structure is decided on.

A summary of the factors of a successful derivatives exchange, the indicators used to measure them and the benchmark used to analyze them is given in table 2.1 on the next page:

Table 2.1: Factors of a successful derivatives exchange and their measures

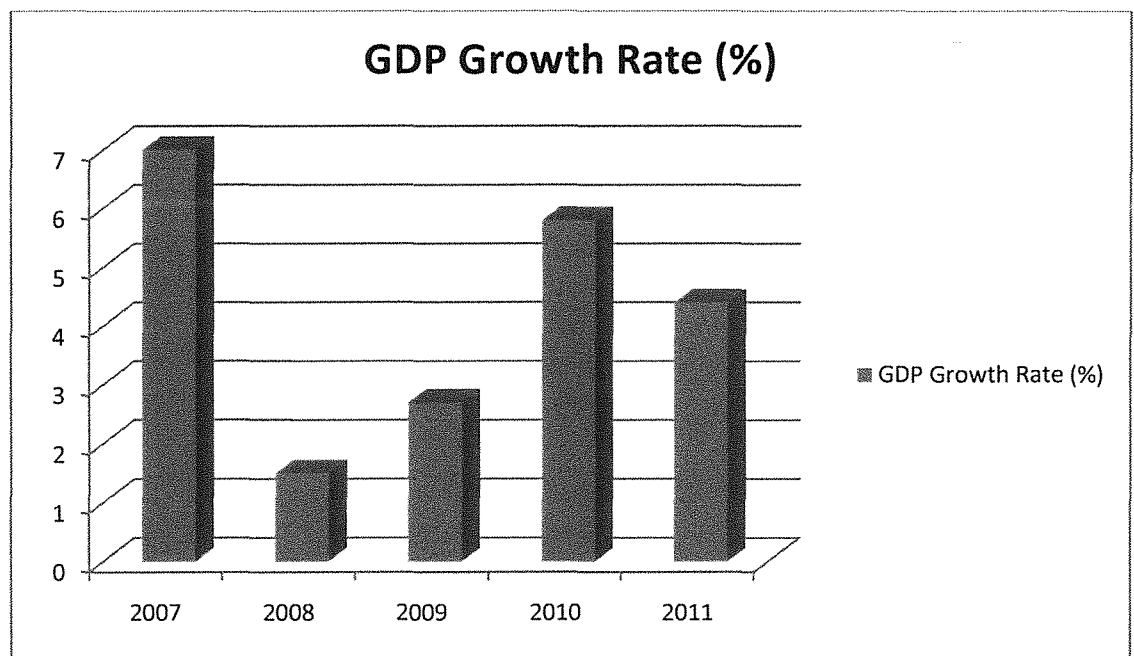
FACTOR OF SUCCESS	MEASURE	YARDSTICK	SOURCE
Economic development	GDP & GDP growth rate Interest rates Inflation rates	Growing/increasing Low & decreasing Low & declining	Tsetsekos and Varangis (1997); Jobst (2007) Yu-Kyung and Mugo-Waweru (2012)
Political stability	FDI net inflows No. of tourist arrivals Change of presidents EUI political stability index	Increasing inflows Increasing arrivals Little or no change Economic distress is characterised by a decline of more than 4% in the GDP growth rate and a GDP per capita of less than \$3000	Yu-Kyung and Mugo-Waweru (2012) Pin and Marcel (2008) Mugo (2009)
Products traded	Demand for product Contract size		Black (1986) Black (1986)
Infrastructural systems	Order flow management Price stabilization features Market – making mechanisms Settlement & clearing procedures Exchange monitoring, control & enforcement	Presence of all stated factors being operationalised on an automated system	Tsetsekos and Varangis (1997); Jobst (2007)
Legal & Regulatory framework	IFRS accounting Derivatives laws & regulation Self regulating organisations Favourable tax environment	Compliant Requisite laws exist Present Present	Jobst (2007) WFE
Developed capital markets	Market capitalization Trading volumes No. of listed companies	High & increasing High & increasing Many & increasing	Levine (1996) Levine (1996) Mugo (2009)
Educating market participants	Mode of education Frequency of education	Extensive education before & during introduction of a derivatives exchange	Mugo (2009) Unis (1998)
Large & active investor population	Retail investors Institutional investors	Many active investors	Mugo (2009)
Feasibility study		Must be done prior to introduction	Tsetsekos and Varangis (1997)

2.4 An overview of Kenya with regard to the factors of a successful derivatives exchange:

2.4.1 Economic Development

According to the Economic Survey 2011 carried out by the Kenya National Bureau of Statistics, Kenya's economy depends mainly on the following sectors to spur its growth: agriculture (21.5% of GDP), manufacturing (10%), wholesale and retail trade (10.3%), transport and communication (9.8%), and financial intermediation (5.6%). The GDP of the country declined in 2008 but started growing again in 2009 to 2011 as shown in the graph below:

Figure 2.1: GDP growth rate in Kenya



Source: Kenya National Bureau of Statistics

An increase in GDP indicates an increase in production which means the economy is growing. Kenya's was at a level just below 7% in 2007, it dropped drastically in 2008 (due to the post-election violence) but started growing again in the years that followed.

This depicts that Kenya's economy is growing which is a positive thing for capital market development.

Inflation rates increased sharply between 2007 and 2009, declined in 2010 but rose again in 2011 as shown in the table below:

Table 2.2: Inflation rate in Kenya

YEAR	2007	2008	2009	2010	2011
INFLATION RATE (%)	4.3	16.2	10.5	4.1	14.0

Source: Kenya National Bureau of Statistics

A high inflation rate discourages investments and savings which denote a lagging economy. The lack of stability in Kenya's inflation rate is detrimental to the economy and thus the development of the capital market.

The Consumer Price Index (CPI) levels, which also measure inflation, are shown below:

Table 2.3: Consumer price index level in Kenya

YEAR	2007	2008	2009	2010
CPI	78.78	91.95	102.26	106.52

Source: Kenya National Bureau of Statistics

The rising trend shows an increasing level of inflation which is a negative indicator for the economy and thus for the establishment of a derivatives exchange.

A growing GDP indicates a growing economy which is favourable for introducing a derivatives market; however the rising inflation in the country may hamper this.

2.4.2 Political Environment

Kenya gained independence in 1963 and since then has been governed by three presidents. The country has enjoyed relative peace within its borders which has fostered an environment of stability within which the economy can grow (other factors held constant). The current president His Excellency Mwai Kibaki launched Kenya's Vision 2030 which is a strategic plan to achieve substantial growth in the economic, political and social sectors by the year 2030. This shows that the Kenyan leadership is willing to support economic growth and ensure political stability which enhances the development of capital markets.

2.2.3 Infrastructural Systems

Using some of Tsetsekos and Varangis (1997) features for infrastructure of an exchange, market mechanisms, price stabilization features, settlement and clearing procedures and exchange ownership, the following is observed about the Kenyan capital market:

A clearing house, Central Depository and Settlement Corporation (CDSC) is the only central counterparty used for settlement, where securities are settled in the CDS system on a gross basis (trade-for-trade processing) while funds are settled on a net basis through the settlement bank. The market mechanism is order driven. According to the CDSC website, trades executed in the Automated Trading System (ATS) are automatically fed into the CDS system and the relevant securities accounts are updated on a real-time basis (pending buy, pending sale). The prescribed price limit is ten percent (10%) of the previous day's closing price, increase or decrease. The Nairobi Securities Exchange was previously owned by members who are the stockbrokers and investment banks in the market. A plan to demutualize the exchange which began in 2006 was finally completed in 2012.

2.4.4 Legal and Regulatory Framework

The Kenyan capital market is regulated by the Capital Markets Authority (CMA). The CMA strives to deepen and broaden the capital markets by developing a regulatory

framework that facilitates the development of new financial products and institutions through research and ensuring fairness and orderliness in the capital markets industry. The CMA's regulatory framework comprises of two Acts of Parliament, Regulations and Rules and Guidelines that govern the market intermediaries. The regulatory framework is crafted in such a way that it encourages self regulation to the maximum practical extent.

In line with the World Federation of Exchanges (WFE) criteria for regulatory standards, the CMA has and enforces regulations on market access and participation; listing by companies; timely, relevant and continuous disclosure of information related to listed companies; trading; order rules for entry, display and execution which clearly establishes priority; transparency and supervision of market activities; regulatory oversight and enforcement; clearing of trades; settlement of payment and transfer of title; enforcement of rules; emergency and summary powers; and business continuity planning. This signifies that the CMA has proper regulatory systems. However, there are no regulations governing derivatives and their trading. These will have to be developed before a market for them is established.

2.4.5 Capital Market Development

The Nairobi Stock Exchange (currently called the Nairobi Securities Exchange) was established in 1954 and currently has sixty listed companies.

According to Levine (1996) a capital market's development is measured by the market capitalization, the liquidity within the market, the trading volumes and the level of volatility. The equity market in the Nairobi Securities Exchange had a market capitalization of Kenya shillings 1120 Billion and a trading volume of Kenya shillings 196 Million in 2011. The turnover from 2008 is shown on the next page:

Table 2.4: Equity Market Trading Volumes

YEAR	2008	2009	2010	2011
VOLUME (KES Million)	196	76	179	196

Source: Nairobi Securities Exchange

The volume has been on an upward trend which is a good indicator for a growing capital market.

2.4.6 Education

In 2010, the Kenya Association for Stockbrokers and Investment Banks (KASIB) published an investor education handbook that informed Kenyan investors of the operations of their stock market. According to the KASIB website, investors would be better equipped to make informed investment decisions. This bid to educate the public was initiated by the market participants. The Nairobi Securities Exchange focuses on educating the capital market players (who include stock brokers, investment banks, listed companies, fund managers and custodians) through their Securities Industry Training Institute (SITI). The capital market regulator, CMA, also has the enhancement of public education on the capital market as part of its mandate and they provide useful information to investors on their website. The success of this mandate shall be discovered in this study.

2.4.7 Investors

The Central Depository and Settlement Corporation (CDSC) hosts 1,943,771 central depository accounts with 25.1 billion shares deposited with them (CDSC Annual report, 2011). This study will determine the proportion of these accounts that are owned by retail investors and how active they are. Similarly, the proportion of trading done by institutional investors such as fund managers and insurance companies shall be determined.

2.5 Comparative analysis of Korea and Mauritius

The Kenyan measures of the determinants of success shall be compared with the conditions prevailing in Mauritius and Korea before they set up their derivatives exchange. Mauritius and Korea are used as a benchmark because they are fast growing exchanges thought to be successful according to the Futures Industry Association (FIA). The Korean Exchange started trading equity index futures in 1996 (Yu-Kyung and Mugo-Waweru, 2012); has large trading volumes based on the contracts traded and was ranked eighth in the world in 2011 and fifth in 2012 in this regard (Acworth, 2013). It also ranked among the best in trading of specific products, specifically the KOSPI 200 option (Market highlights for the first half of 2012, World Federation of Exchanges). Therefore, based on Mugo's (2009) benchmark of a successful exchange, Korea qualifies as it has been in existence for more than fourteen years and it has large trading volumes.

Mauritius is an emerging market which established its stock exchange in 1989, joined the World Federation of Exchanges in 2005 and started trading in derivatives in 2010 according to the Stock Exchange of Mauritius website. In 2011, the Stock Exchange of Mauritius was awarded the 'Most Innovative African Stock Exchange Award' at the AI/NYSE Euronext Investment Summit, beating exchanges from South Africa, Ghana, Egypt, Tunisia, Nigeria and Kenya; according to the World Federation of Exchanges website. The country's economic and capital market development, political climate, infrastructural systems and regulatory framework prior to introducing a derivatives exchange was similar to that of Kenya making it a good comparison choice.

2.6 Chapter Summary

The preconditions to the establishment of a successful derivatives market were discussed in their own respect and then considered in the Kenyan context to gauge their presence or absence. These preconditions (determinants) can be relied on for general reference as to the probability of a derivatives exchange succeeding, whereby the likelihood of success is higher when the determinants are favourable (Mugo, 2009). In

Kenya, little research has been done either on the need or on the determinants of a successful derivatives exchange. This study, using the factors of success highlighted in the chapter, helped to determine the readiness of the Kenyan capital market for a derivatives exchange.

CHAPTER 3: METHODOLOGY

3.1 Introduction

This chapter describes the procedures and methods which were employed in this study, including the research design, proposed population, data collection and data analysis.

3.2 Research design

The study was exploratory in nature and it determined whether the determinants of success of a derivatives exchange can be related to the Kenyan context to determine the likelihood of establishing a successful exchange. The study also employed both qualitative and quantitative research methods.

The determinants of success which are referred to in the objectives of this study include factors that are both qualitative and quantitative in nature. The qualitative factors include: Infrastructure, regulatory framework and education of market participants. These factors are considered qualitative because the elements that are used to measure them gauge their presence or absence. These factors shall be compared with markets that are considered by industry standards to be successful to gauge the readiness of the Kenyan market. The quantitative factors include: economic development, capital market development, political climate and large and active investors. They are quantitative in nature because the elements that are used to measure them comprise of statistical secondary data. These shall also be analyzed by comparison to markets with similar conditions prior to introducing a derivatives exchange.

3.3 Population

The target population comprised of all parties directly concerned with the introduction and trading of derivative products. These parties included the capital market players who include: 11 stock brokers, 10 investment banks, 21 fund managers, 18 investment advisors, the regulator - Capital Markets Authority (CMA), the clearing house – Central Depository and Settlement Corporation (CDSC), and the Nairobi Securities Exchange

(NSE), who were used as respondents when collecting primary data. This population was used because capital market players are most directly affected and involved when a new product is introduced into the capital market.

3.4 Data Collection

Both primary (for qualitative data) and secondary data (for quantitative data) were used to determine the presence or absence of the factors of success. Primary data was collected through questionnaires. The respondents targeted were traders or managers working for capital market players as highlighted above. The response rate was increased through follow up calls and email reminders. Secondary data was collected from the Central Bank of Kenya (CBK), the NSE, and Kenya National Bureau of Statistics (KNBS) and the World Bank database. The period of data collection was from 2006 to 2010 which is five years. This period was chosen to capture the time just before the introduction of an exchange which depicted the prevailing conditions in the country at the time.

3.5 Data Analysis

The main tool of analysis was a comparative study. According to Blackwell et al (2009), comparative studies are used to make broad comparisons across different fields in order to draw from the patterns of experience in one area and to extend this perspective into another area with similar patterns. Similarly, Hantrais (1995) indicates that comparative research methods are used to identify, analyse and explain similarities and differences in issues in order to establish whether shared phenomena can be explained by the same causes. This study used a benchmark checklist of indicators of the various factors identified and compared the checklist for a country whose derivatives exchange is considered to be successful (Korea) with the indicators in Kenya checking for their presence or absence. Descriptive analysis was also used for the data collected from the likert scales used and presented using ratios. The collected data was tabulated using standard fields that can be compared across the board.

CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS

4.1 Introduction

The general objective of this study was to determine whether Kenya can establish a successful derivatives exchange with reference to the factors of a successful derivatives market. This chapter presents the findings of the study in both narrative and tabulated form. The findings are given based on the two specific objectives of the study as explored using the responses from questionnaires given to capital market players and secondary data.

The first section of this chapter discusses the response rate as well as general information garnered from the respondents of the questionnaire. The second section of the chapter discusses the first objective and examines the different factors that contribute to the success of a derivatives exchange. The third section of the chapter discusses the second objective and links the success factors to the Kenyan context. The chapter is then concluded with a brief summary.

4.2 Response rate

Primary data was obtained by issuing sixty five questionnaires to capital market players, namely: stockbrokers and investment banks, fund managers, investment advisors and regulators. Forty three questionnaires were returned representing a response rate of sixty six percent (66%). This level of response was aided by email reminders and going to the respondents' locations.

Out of the forty three respondents, 26% had worked with their companies for less than a year, 37% had worked for their companies between one and five years, and 37% had worked for more than five years in the capital markets industry. This information is important because the responses given came from people who understand the market

and its current state, and who also have a very good sense of what the market needs to establish a derivatives exchange. Majority of the respondents (74%) had worked in the industry for more than one year making them experienced sources of information.

4.3 The success factors of a derivatives exchange

4.3.1 Introduction

The aim of this objective was to examine the factors that contribute towards the establishment of a successful derivatives exchange. This was based on factors identified by previous studies as well as feedback from respondents.

4.3.2 Findings for the success factors of a derivatives exchange

The factors of a successful exchange identified and discussed in the literature review were: a country's economic development, its political stability, a developed capital market, the types of products traded, the infrastructural systems in place, the legal and regulatory framework, the education of the market participants and many and active investors. The findings were as follows:

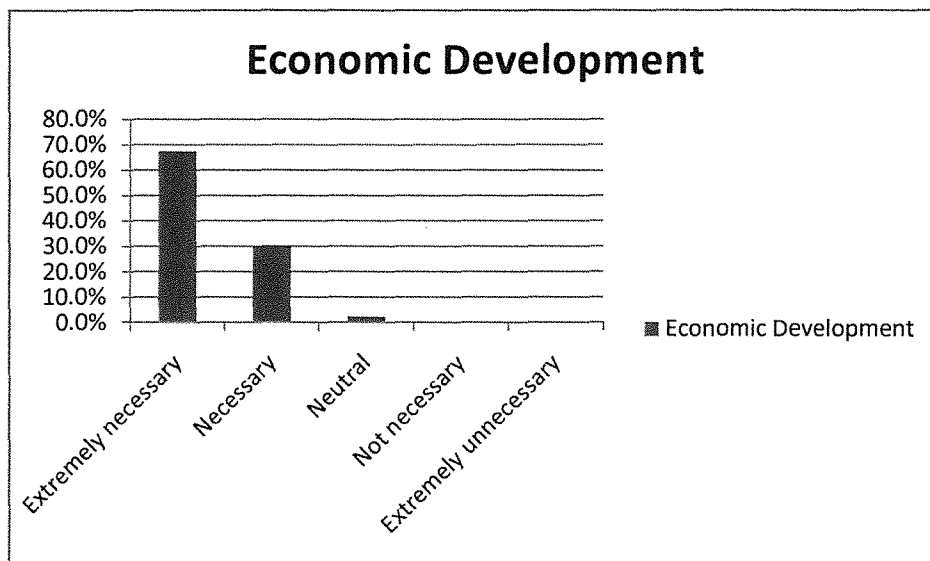
62% of the respondents from the capital market industry said these factors (economic development, its political stability, a developed capital market, the types of products traded, the infrastructural systems in place, the legal and regulatory framework, the education of the market participants and many and active investors) were extremely necessary for a successful derivatives exchange. 31% said the factors were necessary. 6% were neutral. 1% felt that many and active investors as well as the types of products traded were not necessary for a successful derivatives exchange.

A summary of the responses for each factor is given below:

4.3.2.1: Response on the ranking of economic development

A country's economic development; measured by its Gross Domestic Product (GDP), Consumer price index, interest rates and government bond yields, inflation rates and unemployment rates; is important to the success of its capital market and as such, its derivative market (Tsetsekos and Varangis, 1997).

Figure 4.1: Response on the ranking of economic development



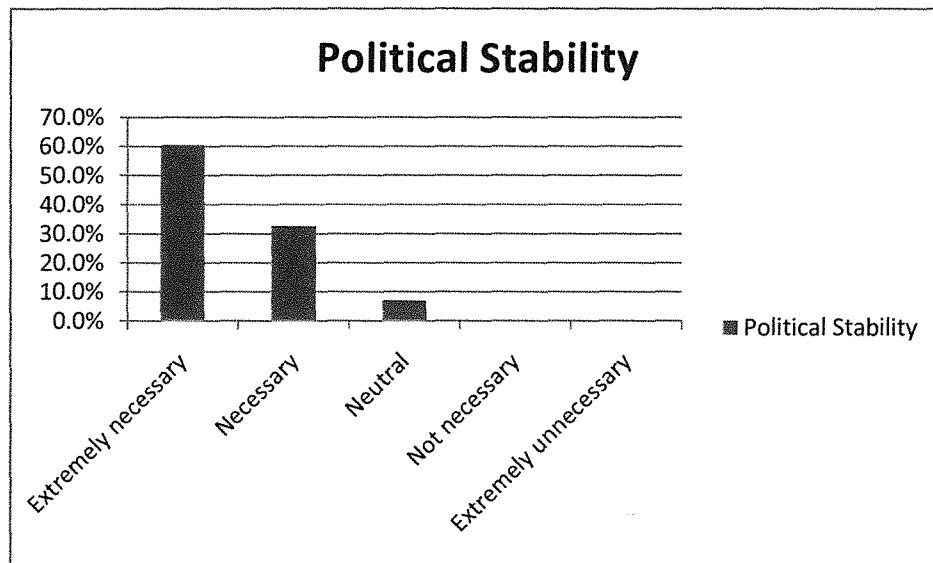
As depicted in the figure above, 67% and 30% of the respondents thought that economic development was extremely necessary and necessary respectively for the success of a derivatives market, thus agreeing with the findings of Tsetsekos and Varangis (1997) and Yu-Kyung and Mugo-Waweru (2012).

4.3.2.2: Response on the ranking of political stability

Political stability positively affects a country's economic growth, while negative changes in the political climate lowers the country's attractiveness thus impacting negatively on

foreign investments into the country (Pin and Marcel, 2008). The figure below shows the responses received from the questionnaires returned:

Figure 4.2: Response on the ranking of political stability

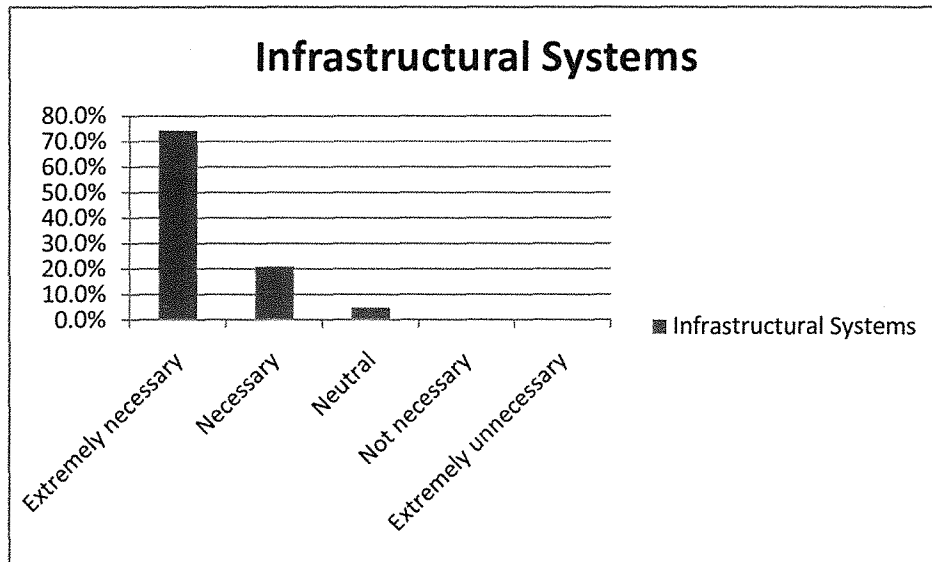


61% of the respondents thought that political stability was extremely necessary for a successful derivatives exchange, while 33% felt it was necessary. These findings are consistent with those of Yu-Kyung and Mugo-Waweru (2012) and Pin and Marcel (2008).

4.3.2.3: Response on the ranking of infrastructural systems

An efficient derivatives exchange has the following features to support its operations: the management of order flow, price stabilization features or circuit breakers introduced in the market, market-making mechanisms, settlement and clearing procedures, exchange monitoring, and control and enforcement functions. The figure below indicates the respondents' views of the importance of infrastructural systems:

Figure 4.3: Response on the ranking of infrastructural systems

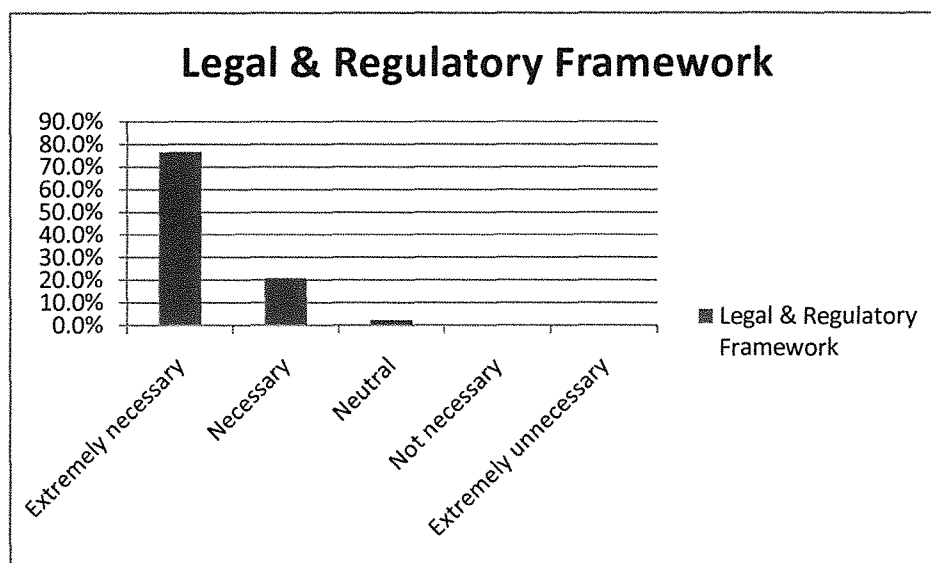


74% of the respondents indicated that infrastructural systems were extremely necessary for the success of a derivatives exchange, while 21% indicated that they were necessary. These findings are consistent with the studies done by Mugo (2009) and Jobst (2008) on infrastructural systems for a successful derivatives exchange.

4.3.2.4: Response on the ranking of the legal and regulatory framework

According to Jobst (2008) and Purfield et al (2006), regulated markets are generally deeper, more liquid, more efficient and experience lower impact from shocks than unregulated markets

Figure 4.4: Response on the ranking of the legal and regulatory framework

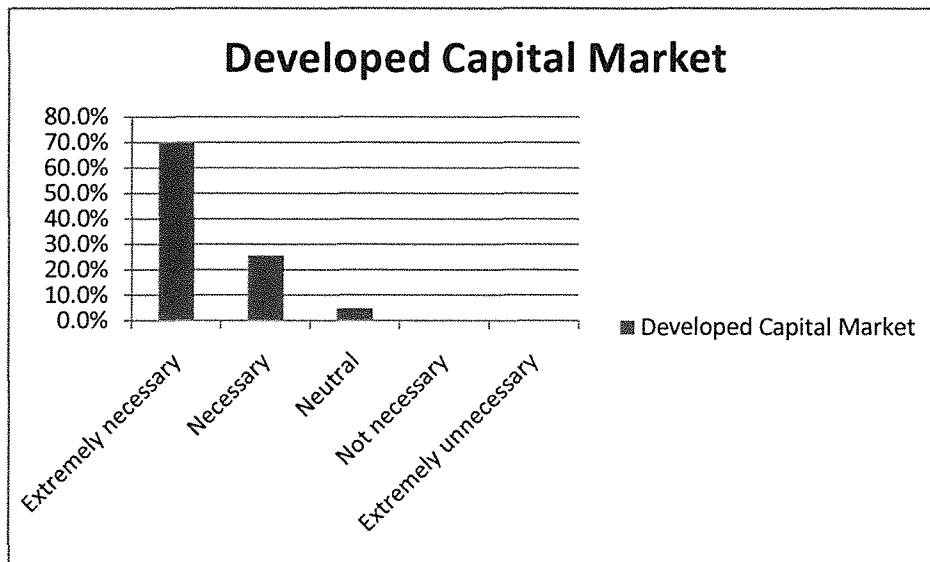


From the figure above, we can see that 77% and 21% of the respondents felt that a robust legal and regulatory framework was extremely necessary and necessary respectively for the success of a derivatives exchange. This is consistent with the findings from the studies done by Jobst (2007), Jobst (2008) and Purfield et al (2006).

4.3.2.5: Response on the ranking of a developed capital market

According to Yu-Kyung and Mugo-Waweru (2012) and Mugo (2009), a developed capital market is characterized by an existing equities market that is large and liquid to attract many participants and is measured by the market capitalization, the trading volumes and the number of listed companies.

Figure 4.5: Response on the ranking of a developed capital market

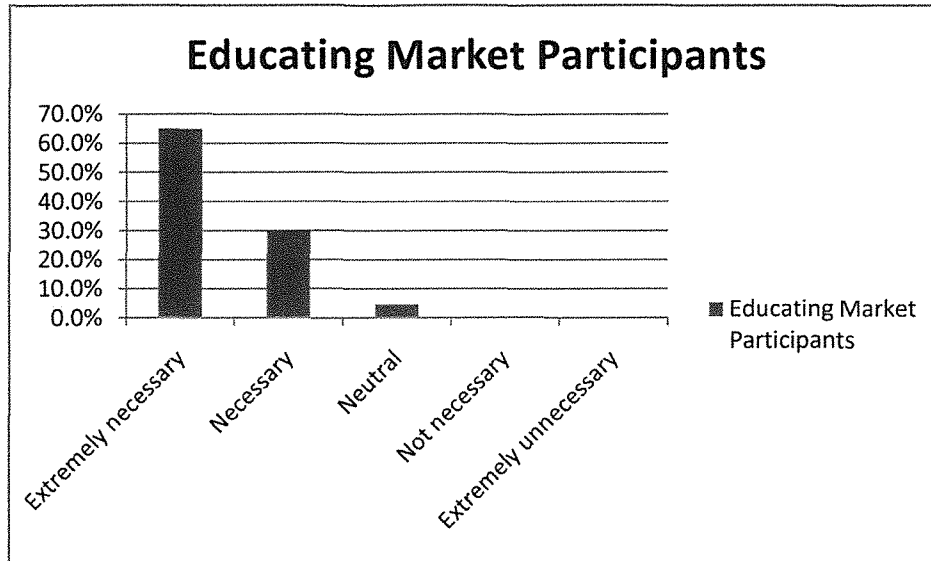


96% of the respondents agreed with the findings of Yu-Kyung and Mugo-Waweru (2012) and Mugo (2009) that a developed capital market was critical to the successful introduction of a derivatives exchange.

4.3.2.6: Response on the ranking of educating market participants

With regard to the importance of educating market participants about derivatives and their trading, the following was found:

Figure 4.6: Response on the ranking of educating market participants

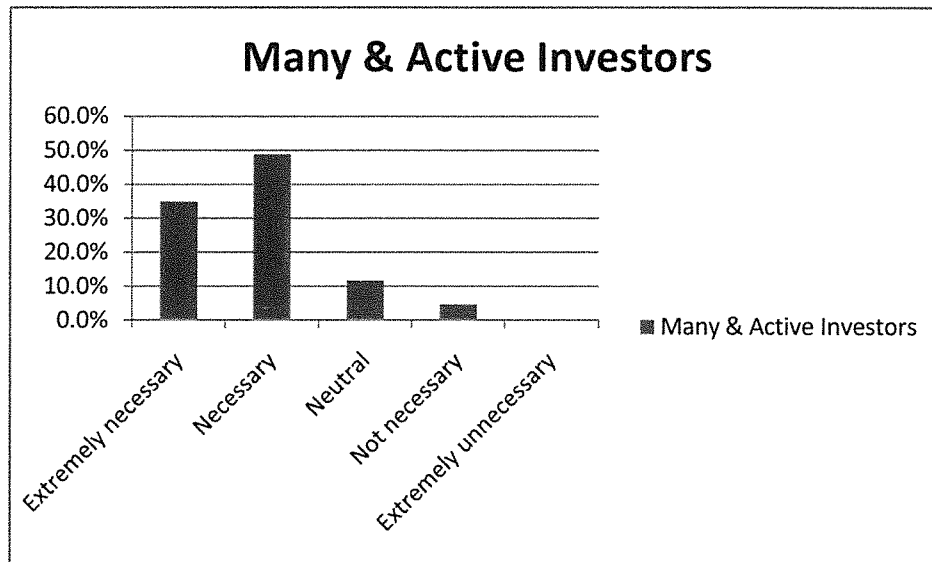


65% of the respondents felt that education was extremely necessary while 30% said that it was necessary. This finding was consistent with the studies done by Mugo (2009) and Unis (1998).

4.3.2.7: Response on the ranking of many active investors

Many active investors are a critical ingredient for large trading volumes in a capital market (Yu-Kyung and Mugo-Waweru, 2012). The following are the findings made with regard to the investor population:

Figure 4.7: Response on the ranking of many active investors

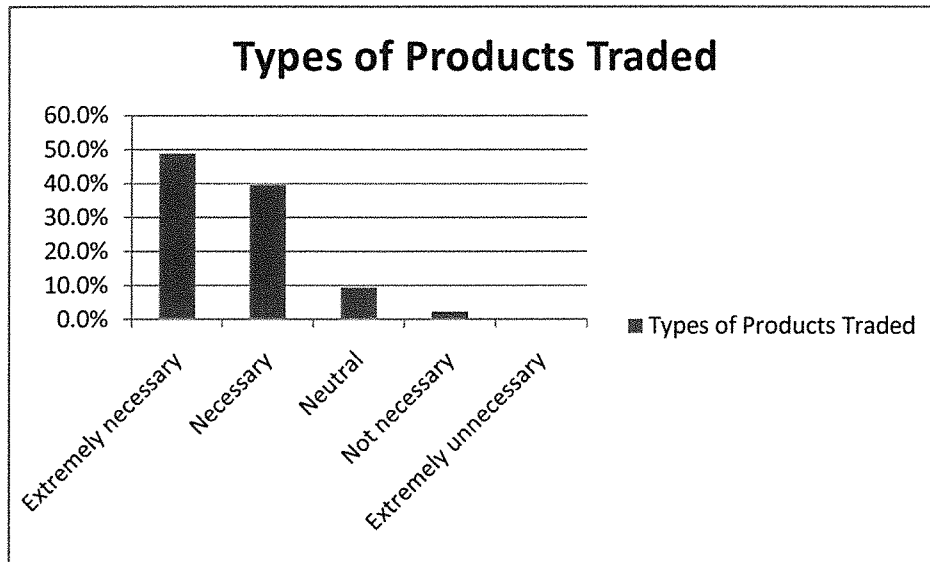


84% of the respondents felt that many active investors who improve the liquidity of a market were extremely necessary and necessary for a successful derivatives exchange. This is consistent with the findings of the studies done by Yu-Kyung and Mugo-Waweru (2012) and Mugo (2009).

4.3.2.8: Response on the ranking of the types of products traded

According to Black (1986) a successful product is one that has a high trading volume, attracts a lot of trading interest and draws many people to trade. Thus, a derivatives exchange would require successful products for it to succeed.

Figure 4.8: Response on the ranking of the types of products traded



49% of the respondents in this study felt that the type of products traded were extremely necessary for a successful derivatives exchange, while 40% felt that choice of products was necessary. This is consistent with the findings of the studies done by Black (1996) and Yu-Kyung and Mugo-Waweru (2012).

Summary of section:

Given the findings, we can infer that the majority (93%) of the respondents view the stated factors to be critical for a derivatives exchange's success. These factors need to be present at the point of establishing the exchange and need to be maintained at the same level as much as possible during the existence of the exchange. This is consistent with the studies done by Black (1986); Jobst (2007, 2008); Mugo (2009); Purfield et al (2006) Tsetsekos and Varangis (1997); Yu-Kyung and Mugo-Waweru (2012); and Unis (1998) on the success factors of a derivatives exchange.

4.3.3 Other Success Factors:

Other factors that contribute towards the success of a derivatives exchange were identified by the respondents of the questionnaires as follows:

Exchange and clearing house transaction fees: these should be competitive to attract as many investors as possible.

Price and data dissemination: having a data reporting system will ensure that product information can be accessed by all (locally and internationally) for greater transparency and well informed decisions.

A sponsor and full support from all stakeholders: a sponsor will drive the process of the derivatives exchange being established and maintained. The sponsor will liaise with different stakeholders to obtain buy-in for the exchange. A key relation that will have to be built and a good interaction sustained will be with the media (financial press) as they will give the derivatives exchange good exposure.

A well functioning financial market: in addition to the developed capital market, a robust financial market will be important because many products shall be based on currencies as they are popular.

A risk management framework: this will assist in governing the many risks that will arise out of having a derivatives exchange. The regulatory framework may not be able to cover all eventualities, and those in the market (the users of the products) will have a large contribution to make in identifying and proposing ways of managing risks.

Other factors identified were: a proactive regulator, inter-exchange (cross border) sharing of information, and a higher degree of automation in the capital market with stronger checks and balances in place.

4.3.4 Summary of section

As discussed in the literature review from previous studies done by Jobst (2007, 2008); Mugo (2009); Tsetsekos and Varangis (1997); Yu-Kyung and Mugo-Waweru (2012); and Unis (1998), economic development, political stability, developed capital market, the types of products traded, infrastructural systems in place, the legal and regulatory framework, education of the market participants and many and active investors, were found to be important for a successful derivatives exchange.

The findings of this study also indicate that the said factors are critical. In addition, other factors have also been put forth as important when establishing a derivatives exchange. These factors include: low transaction fees, data dissemination, a robust financial market, a risk management framework, a sponsor and support from all stakeholders.

When all these factors are in place, then it is most likely that the derivatives exchange that will be set up shall be successful.

4.4 Success factors of a derivatives exchange: the Kenyan context

4.4.1 Introduction

The aim of this objective was to review the stated determinants of success in Kenya's context and compare them with the same determinants in a successful market (South Korea which is considered a developed market, as well as Mauritius which is considered an emerging market). This comparison will help us determine whether the required factors of success are present in Kenya. This will then help us to infer whether Kenya is ready to establish its own derivatives exchange.

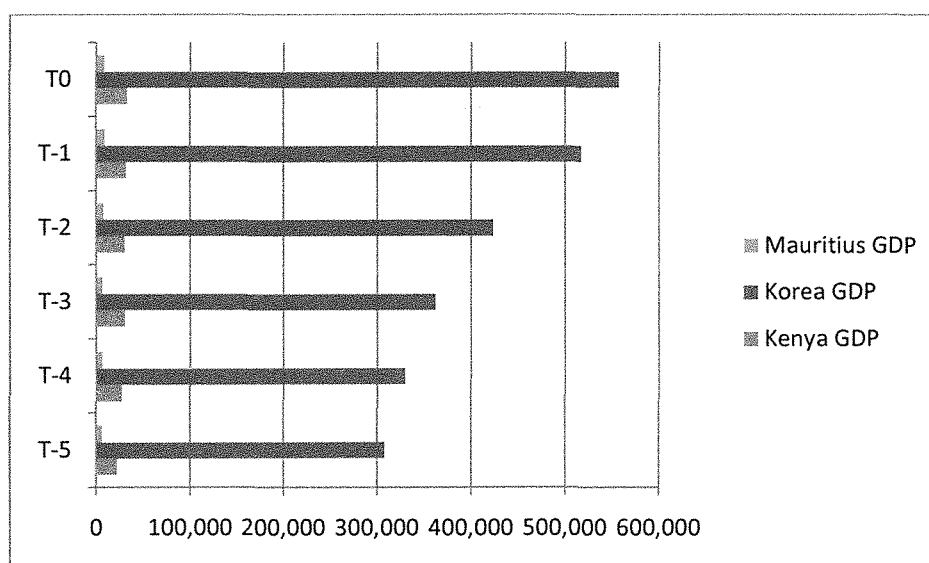
4.4.2 Findings for the success factors of a derivatives exchange in Kenya:

4.4.2.1 Economic Development

4.4.2.1.1 GDP and GDP growth rate:

Kenya's Gross Domestic Product (GDP) grew from US \$ 22 billion in 2006 to US\$ 32 billion in 2010, an increase of 43% over the five year period. The GDP growth rate grew from 6.3% in 2006 to a high of 7% in 2007, dropped to 1.5% in 2008 (due to the effects of the post-election violence) and grew again to 5.7% in 2010. This represented an average growth rate of 4.6% over the five year period. This is shown in figure 4.1 below:

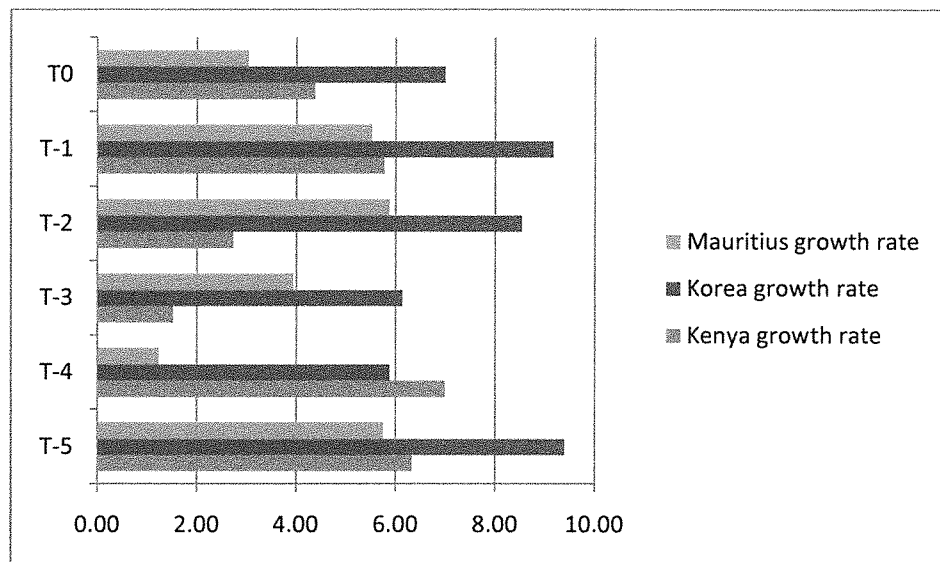
Figure 4.9: Comparison of Kenyan, Korean and Mauritian GDP



Source: World Bank database

In comparison, Korea's GDP grew from US\$ 308 billion in 1991 (five years before they introduced their derivatives market) to US\$ 557 billion in 1995, an increase of 81% over the five year period. The GDP growth rate was 9.4% in 1991, dropped to 5.8% in 1992 and then grew again to 9.2% in 1995. This represented an average increase of 7.8% over the five year period. The GDP growth rates are shown in figure 4.2 on the next page.

Figure 4.10: Comparison of Kenyan, Korean and Mauritian GDP growth rates



Source: World Bank database

To make another comparison, Mauritius' GDP grew from US\$ 6 billion in 2005 to US\$ 9 billion in 2009, an increase of 40% over the five year period. The GDP growth rate was 5.7% in 2005, dropped to 1.2% in 2006 and then grew to 5.5% in 2009. This represented an average increase of 4.2% over the five year period.

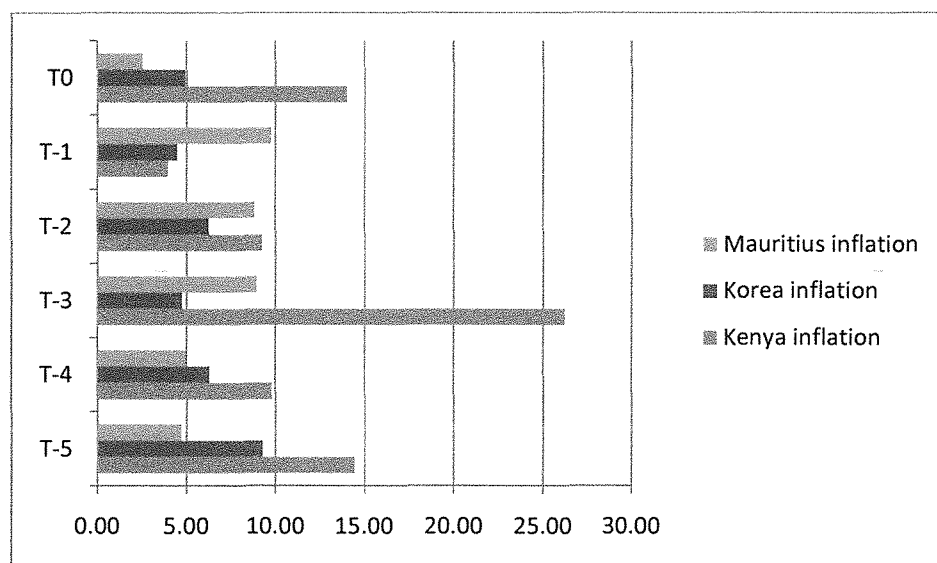
Kenya's GDP is not as high as Korea's which means that Kenya's market value for its final goods and services is not very high, thus its economy is not as strong.

The GDP growth rate for Kenya has increased which indicates a growing economy. A growing economy is conducive for a derivatives exchange; however a relatively weak economy does not support the sustenance of a derivatives market. Therefore, with regard to the GDP and its growth rate, Kenya's economy is not strong but it is growing making it partially unfavourable for a derivatives market. This finding is consistent with studies done by Tsetsekos and Varangis (1997) and Yu-Kyung and Waweru (2012).

4.4.2.1.2 Inflation rate:

The inflation rate in Kenya was erratic over the five year period, moving from an inflation rate (using consumer prices) of 14.4% in 2006 to 4% in 2010, with an average rate of 12.7%. The inflation rate rose again to 14% in 2011. A high inflation rate is not good as it discourages savings and investments as it fosters uncertainty in the economy and its ability to grow.

Figure 4.11: Comparison of Kenyan, Korean and Mauritian inflation rates



Source: World Bank database

Korea's inflation rate declined from 9.3% in 1991 to 4.5% in 1995. A declining rate depicts a stronger economy and is good for saving and investing. Mauritius's inflation rate rose from 4.7% in 2005 to 9.7% in 2009. An increasing inflation rate is a negative sign for the economy. The inflation rates discussed are shown in figure 4.3 above.

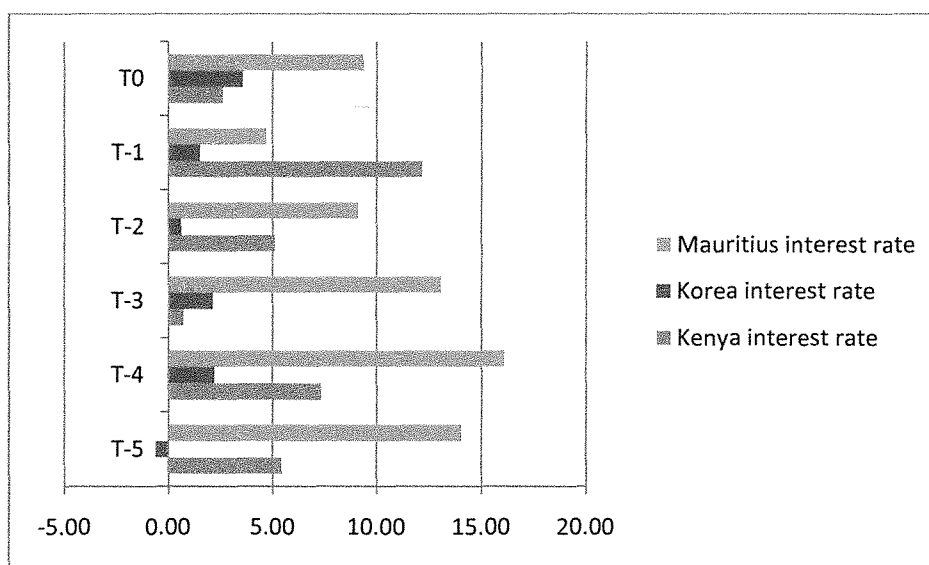
Kenya's generally high inflation rate has a negative effect on the economy, which in turn discourages investment and thereby hampers the growth of the capital markets which

has a negative effect on the proposed derivatives market. This finding is consistent with the study done by Yu-Kyung and Waweru (2012).

4.4.2.1.3 Interest rate:

According to the World Bank database, the real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator. Kenya's real interest rate rose from 5.4% in 2006 to 12.1% in 2010, with an average rate of 6.1% as shown in figure 4.4 below:

Figure 4.12: Comparison of Kenyan, Korean and Mauritian interest rates



Source: World Bank database

Korea, on the other hand, had a real interest rate of -0.6% in 1991 that rose to 1.5% in 1995. Mauritius had a real interest rate of 14% in 2005 that dropped to 4.7% in 2009.

Kenya's interest rates are increasing while those of Korea and Mauritius are declining. Low interest rates are favourable to an economy as they encourage borrowing and investing. Korea's and Mauritius' interest rates helped foster a conducive economic environment for their derivatives exchanges.

In conclusion, Kenya's economy is not considered to be very strong, however it is growing. A strong and growing economy is required for a successful derivatives exchange. Its inflation rate is high and is on an upward trend. A low and declining inflation rate is required. Its interest rates are increasing. Low interest rates are favourable for the economy.

Therefore, the indicators for economic development are unfavourable and they show that Kenya is not yet ready to establish a derivatives exchange. This finding is supported by similar findings from the studies done by Tsetsekos and Varangis (1997) and Yu-Kyung and Waweru (2012) on the success indicators that would support a successful derivatives exchange.

4.4.2.2 Political Stability

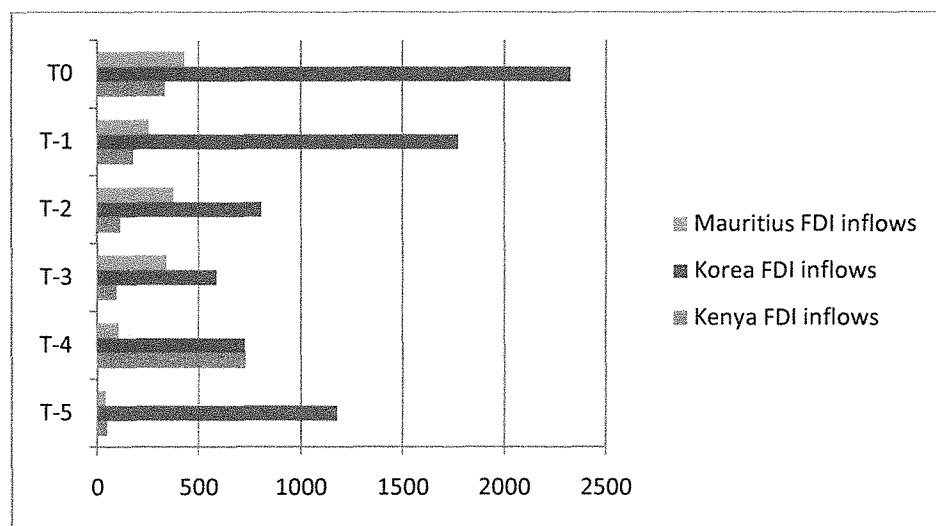
According to Pin and Marcel (2008), political instability negatively affects economic growth and some of the indicators of political instability used were: changes in government and presidents, coup d'états, demonstrations and number of years a party is in office. Yu-Kyung and Mugo-Waweru (2012) used the level of foreign direct investments (FDI) net inflows and the number of tourist arrivals; and Mugo (2009) used the Economist Intelligence Unit (EIU) political instability index (which includes: GDP growth and GDP per capita) as measures of political instability. These measures are used in this study.

Kenya has experienced relative calm and political stability since she gained independence in 1963. She was governed by President Jomo Kenyatta from 1964 to 1978; who was succeeded by President Daniel Moi from 1978 to 2002, who then handed over power to President Mwai Kibaki in 2002 to 2013. Kenya has conducted regular elections every five years and though politics has been constantly characterized by strong ethnic undercurrents, there has only been one major incident of political unrest and violence – the post-election violence in 2007/2008 (Bertelsmann Stiftung, BTI 2012).

Korea, on the other hand, experienced several periods of political unrest after independence with the first three presidents being forcefully removed from power. However, after their free and fair elections in 1992 where a civil president was elected, Korea was able to restore political stability within its borders.

The measures of political instability are compared in figures 4.5 to 4.8 below:

Figure 4.13: Comparison of Kenyan, Korean and Mauritian FDI net inflows



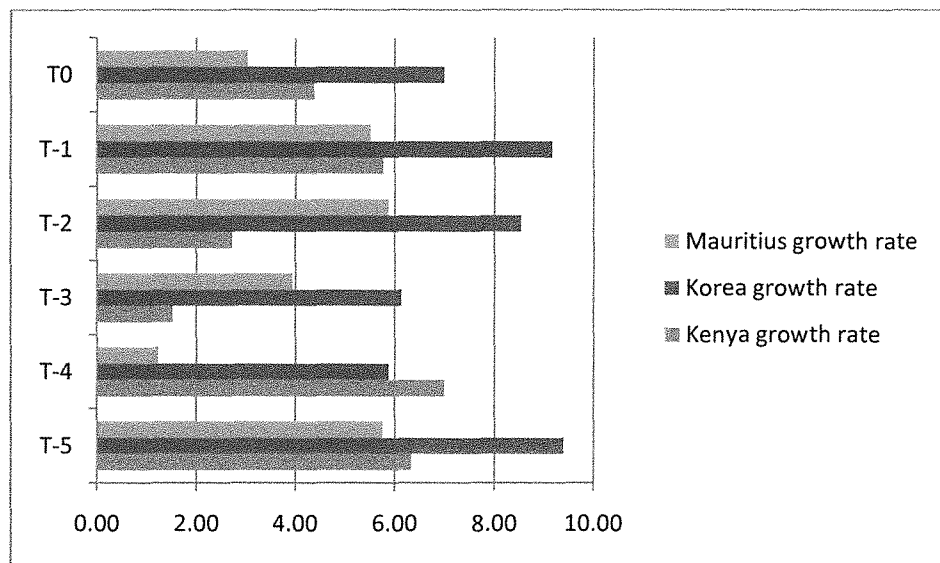
Source: World Bank database

Net FDI inflows into Kenya grew in 2006 and 2007, declined in 2008 (due to the instability caused by the post-election violence) but increased again from 2009 to 2011.

An increasing net inflow of investments from foreigners signifies the confidence that investors have in the Kenyan economy which in turn signifies a stable political climate.

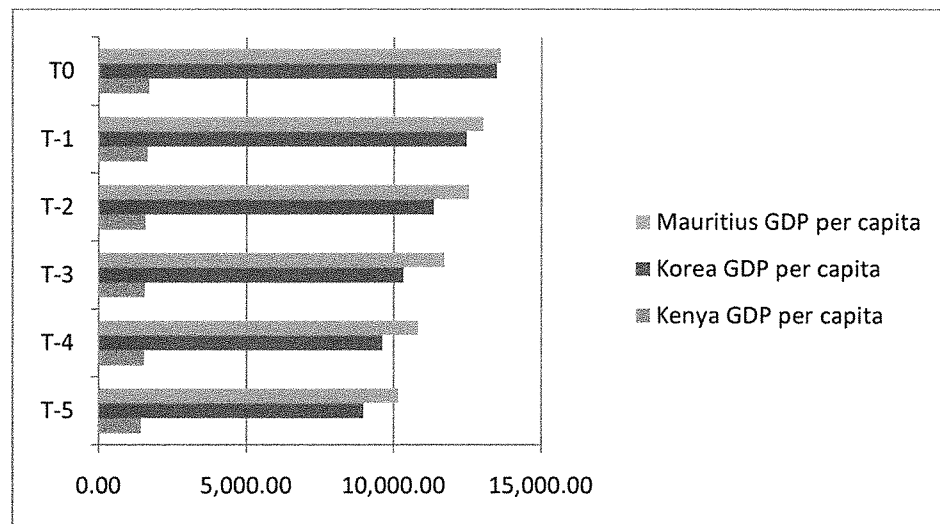
Both Korea and Mauritius also have increasing net inflows of FDI into their countries showing that their political climates were stable.

Figure 4.14: Comparison of Kenyan, Korean and Mauritian GDP growth rates



Source: World Bank database

Figure 4.15: Comparison of Kenyan, Korean and Mauritian GDP per capita



Source: World Bank database

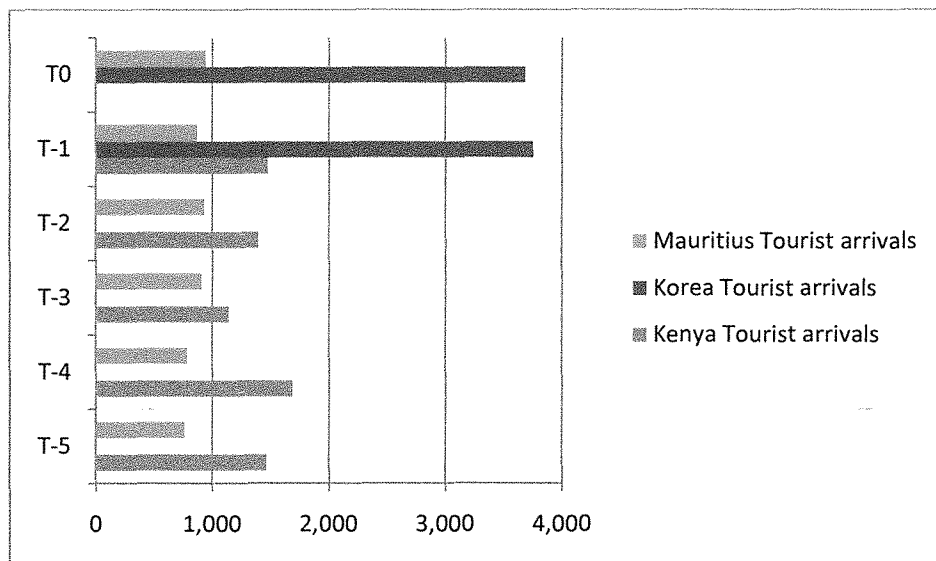
According to the Economist Intelligence Unit (EIU) Political Instability Index, one measure of the level of political risk and social unrest in a country is its level of economic distress which is measured by GDP growth, GDP per capita and unemployment rates. A decline of more than 4% in the GDP growth rate, unemployment rates of more than 10% and GDP per capita of less than US\$ 3,000 denotes the risk of political instability.

Data on Kenya's unemployment rates was not available in the World Bank database or the Kenya National Bureau of Statistics database, so that measure was not analyzed. The GDP growth rate for Kenya declined by 31% between 2006 and 2011. This represented an annual decline rate of 5%. The GDP per capita for Kenya was consistently below US\$ 3,000 between 2006 and 2011.

In Korea's case, the growth rate declined by 25% between 1991 and 1996. This represented an annual decline of 4%. The GDP per capita levels were way above the US\$

3,000 threshold. Similarly, Mauritius had a GDP per capita that was above the set threshold over the five year period. However, its growth rate declined by 47% between 2005 and 2010, representing an 8% annual decline rate which is below the acceptable threshold.

Figure 4.16: Comparison of Kenyan, Korean and Mauritian number of tourist arrivals



Source: World Bank database

The number of tourist arrivals in both Kenya and Mauritius has been steadily increasing. Kenya recorded a decline of 32% in 2008 due to the post-election violence in that year. Data on the number of tourist arrivals was not available for the years 1991 to 1994, but the tourists who visited in 1995 were 3.7 million which is a large number compared to Kenya and Mauritius. A growing number of tourists to the country depict a favourable political climate. The number of tourists visiting Kenya has been increasing which infers that the country's political environment is stable.

The above analysis shows that Kenya has potential risk of political instability on both fronts (GDP growth rate and GDP per capita). Korea's indicators were above the set threshold signifying the country's political stability which enhances economic growth which in turn is good for the development of a derivatives market. Mauritius passes the

GDP per capita test but fails the GDP growth rate test, so the level of risk of political instability cannot be concluded. Korea's stable political climate enhanced its economic growth which was a plus for the establishment, growth and success of its derivative market.

Kenya's political climate depicts a stable environment; however, the level of economic distress which measures the level of political risk is lower than the set standards, making it unfavourable for its economic growth. Given the recommendations made from the studies done by Mugo (2009) and Yu-Kyung and Waweru (2012) Kenya's indicators for political stability are not suitable for establishing a derivatives market just yet.

4.4.2.3 Infrastructural Systems

According to Mugo (2009), the types of infrastructure needed for a derivatives exchange (before one is set up and after it is introduced) include: market mechanisms, clearing and settlement systems, exchange ownership, information dissemination, price stabilization features, and exchange monitoring, control and enforcement systems.

Market mechanisms include: market making, order-driven systems, quote-driven systems and specialist systems.

Korea has in place a fully automated trading system which enhances the flow of orders and execution of trades. It has a fully functional clearing and settlement process with the Korea Exchange acting as the central clearing party, and the Korea Securities Depository carrying out the settlement. The Korea Exchange is a demutualized private company, and in 2011 it announced its plan to list publicly but this is still ongoing (Jung, 2011). Price stability is checked by having circuit breakers, where trading is suspended when prices decrease by more than 10%. And finally, monitoring and control of the exchange is done by the Financial Services Commission (Korea's regulator).

Kenya's infrastructural systems are based on the trading of equities and bonds but the systems shall be compared to Korea's and the areas of deficiency identified for improvement.

The Nairobi Securities Exchange (NSE) has a fully automated trading system which organizes the flow of orders and enhances the execution of trades, however it does not have market makers nor does it have margin requirements. For clearing and settlement processes, the Exchange will have to set itself up as a central clearing party and the Central Depository and Settlement Corporation (CDSC) can fill the settlement role, just as it currently does for equities.

The NSE has been a member-owned firm, but plans are at an advanced stage for demutualization which will culminate in its listing in the year 2013. Price stabilization features already exist for equity trading where trading can only occur within a margin of an increase or decrease of 10%.

The exchange is monitored and controlled by the Capital Markets Authority (CMA). A surveillance system was launched by the CMA in 2012 which now assists the CMA to ensure that trading of securities at the NSE is carried out in a manner consistent with the laws, regulations and guidelines governing securities and that market players act in compliance with the Capital Markets Act and Regulations.

In summary, one of the key elements of the infrastructure of derivatives exchange, market mechanisms, will have to be developed and operationalized before a derivatives exchange is set up in Kenya. The other features: clearing and settlement, exchange ownership, price stabilization and exchange monitoring and control, exist in some form and will only have to be improved before an exchange is set up. Given these findings and making reference to the study done by Mugo (2009) Kenya does not all have all the required infrastructural factors in place and so is not ready to establish a derivatives exchange.

4.4.2.4 Legal and Regulatory Framework

According to Jobst (2007), legal and regulatory frameworks governing derivatives should be based on compliance with International Financial Reporting Standards (IFRS), existence of specific derivative laws, market monitoring through self-regulating organizations (SROs), and a favourable tax environment for derivatives trading.

A comparison of Kenya, Korea and Mauritius shows the following:

Table 4.1: Factors underlying legal and regulatory frameworks for derivative markets

	Kenya	Korea	Mauritius
IFRS	Y	Y	Y
Derivatives Law	N	Y	Y
SRO	N	Y	N
Favourable tax environment	Y	Y	Y

Source: Nairobi Securities Exchange; Stock Exchange of Mauritius and Korea Exchange

Korea has all the factors needed for a robust legal and regulatory framework, having finally adopted IFRS in 2011. Mauritius has adopted IFRS, has a specific derivatives law in place and boasts a very tax friendly environment. However, it is yet to fully become a self-regulating organization.

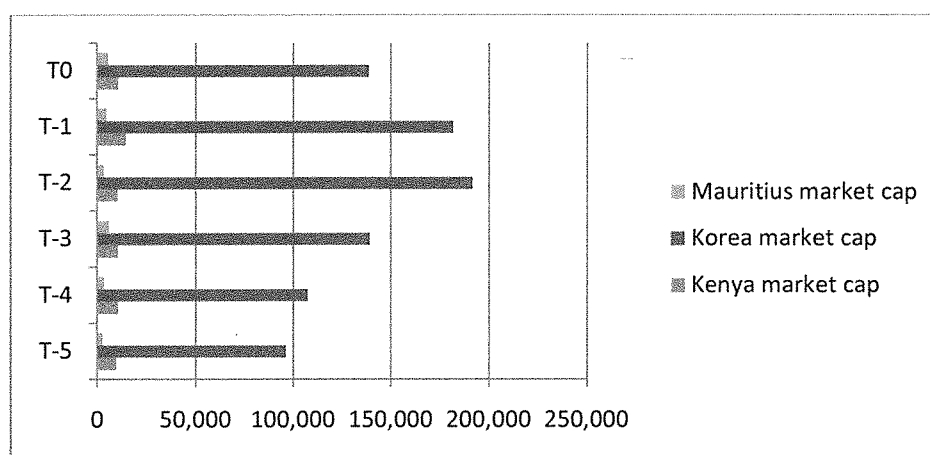
Kenya adopted IFRS and does not tax Value Added Tax (VAT) or capital gains tax on financial securities. We are yet to develop derivatives laws and the Nairobi Securities Exchange is not yet a self-regulating organization. The Capital Markets Authority (CMA), the industry regulator will have to formulate appropriate regulations before a derivatives exchange is established.

Bearing in mind that a robust and a functional legal and regulatory framework is key to the proper functioning of a derivatives exchange, Kenya does not have the required laws and regulations and is thus not prepared to establish an exchange. This is consistent with the study done by Mugo (2009).

4.4.2.5 Capital Market Development

Borrowing from Mugo (2009), market capitalization, trading volumes, turnover values and the number of listed companies can be used as measures of a developed capital market. These variables are compared in the figure below:

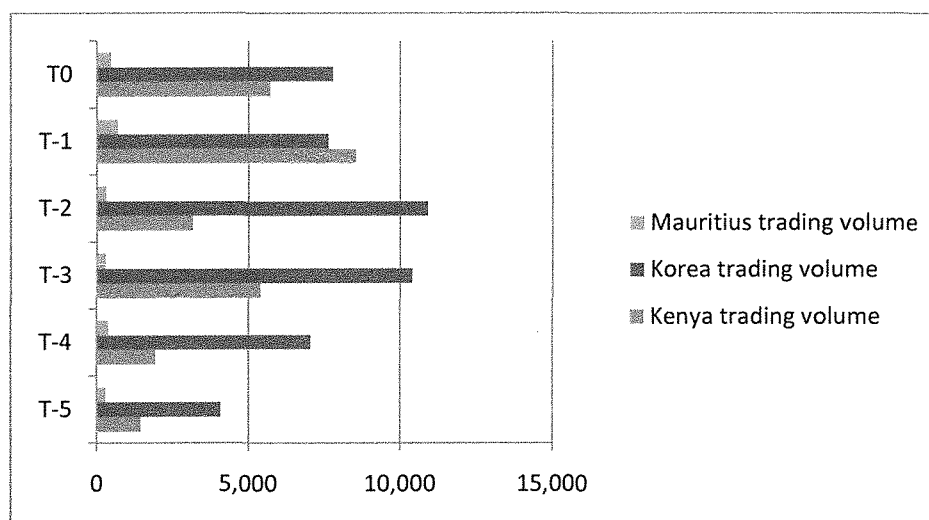
Figure 4.17: Comparison of Kenyan, Korean and Mauritian market capitalization



Source: Nairobi Securities Exchange; Stock Exchange of Mauritius, Korea Exchange and the African Securities Exchanges Association

Market capitalization of companies listed on the Nairobi Securities Exchange had a general increasing trend between 2006 and 2011. So did those of the Korea Exchange between 1991 and 1996; as well as at the Stock Exchange of Mauritius between 2005 and 2010. However, market capitalization for Kenya was almost 13 times lower than that of Korea. Mauritius recorded values that were even lower than Kenya's.

Figure 4.18: Comparison of Kenyan, Korean and Mauritian trading volumes



Source: Nairobi Securities Exchange; Stock Exchange of Mauritius, Korea Exchange and the African Securities Exchanges Association

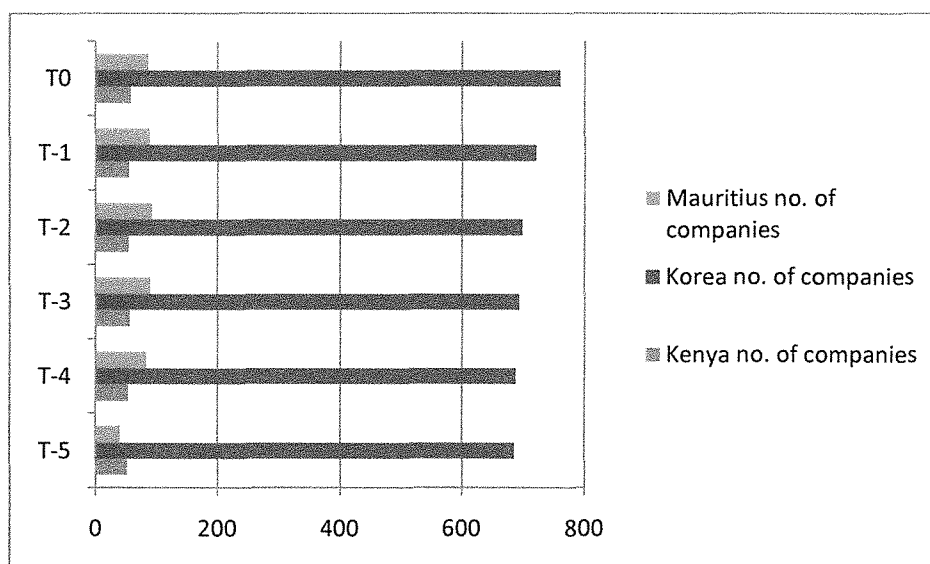
Trading volumes (the number of shares traded) and turnover (the value of shares traded) for Kenya and Korea as well as Mauritius had an increasing trend over the five year period, though the turnover in Korea is over 100 times that of both Kenya and Mauritius.

Table 4.2: Comparison of Kenyan, Korean and Mauritian equity turnover

			T ₅	T ₄	T ₃	T ₂	T ₁	T ₀
Equity turnover (Millions)		Kenya	1,187	1,108	1,223	477	1,379	976
		Korea	85,000	116,000	212,000	286,000	185,000	178,000
		Mauritius	150	181	412	349	333	375

Source: Nairobi Securities Exchange; Stock Exchange of Mauritius, Korea Exchange and the African Securities Exchanges Association

Figure 4.19: Comparison of Kenyan, Korean and Mauritian number of listed companies



Source: Nairobi Securities Exchange; Stock Exchange of Mauritius, Korea Exchange and the African Securities Exchanges Association

The number of listed companies in Kenya was about 13 times less the number of listed companies in Korea. The implication of this comparison is significant because the higher the number of listed companies, the greater the variety to choose from for investors, the larger the number of investors and the higher the trading volumes. Kenya has very few listed companies as compared to Korea, signifying that its capital market is not as developed.

When considering introducing a derivatives market, it is useful for the underlying market to have large market capitalization, large trading volumes and turnover and many listed companies. Kenya's capital market is not as developed as Korea's capital market with regard to these three indicators and thus, it may struggle to achieve the required scale of trading volumes and liquidity that makes a derivatives market

successful. This is consistent with the findings from the studies done by Levine (1996), Mugo (2009) and Yu-Kyung and Waweru (2012).

4.4.2.6 Education of Market Participants

The current level of market player and investor education in Kenya can be gauged by the frequency of training carried out by the regulators and the media used to carry out this training.

The respondents of the questionnaires gave feedback as displayed below:

Table 4.3: Investor Education

	CMA	NSE	CDSC	KASIB
Variety of media used	29%	35%	21%	15%

	Monthly	Quarterly	Semi-annually	Annually	Never
Frequency of training	8%	42%	23%	15%	12%

Investor education is carried out for market players mainly on a quarterly and semi-annual basis. Only 12% of the respondents had not attended the training that was offered. This is a very encouraging trend given that education for a new market such as that of derivatives and for its products must be carried out for there to be meaningful participation in the trading. This training can easily be co-opted alongside the regular training that already exists.

Table 4.4: Medium used to carry out investor education

Medium	
Radio	4%
TV	11%
Social media	2%
Newspapers	17%
Brochures	11%
Website	30%
Road shows	5%
Seminars/workshops	20%

The most popular medium currently in use to carry out the investor education is the websites and seminars. The use of websites to pass on information is not effective. This is because it is not interactive and there is no assurance that investors and market players understand the information passed on. The use of seminars is most effective as there is two-way communication.

As a culture of investor education already exists, the introduction of training on derivatives markets and their products will be easily adopted pointing the fact that Kenya is prepared to introduce a derivatives exchange with regard to this factor. This finding is supported by the studies done by Mugo 2009) and Unis (1998).

4.4.2.7 Large and Active Investors

The Kenyan population is estimated at 43 million people (CIA World Fact Book, 2012). Out of these, 2.03 million accounts have been opened with the Central Depository and Settlement Corporation (CDSC). This translates to at least 4% of the Kenyan population owning at least a share. However, out of those that have accounts, only 9% trade actively. This represents only 0.36% of the Kenyan population who are active traders at the Nairobi Securities Exchange (NSE). In contrast, 14% of the Korean population owned at least one share prior to the introduction of a derivatives exchange, with retail investors contributing more to the trading volumes than institutional investors. Of the

total retail investors, 67% trade at least once per month and 12% trade at least three times a week.

The Korean market has many investors who trade actively on the stock exchange. Kenya, on the other hand, has very few investors who trade actively on its stock exchange. Therefore, fewer and inactive investors lead to lower trading volumes and less liquidity in the exchange. These factors do not enhance the development of the capital market which will contribute negatively to the success of a derivatives exchange once established. With regard to this factor, Kenya is thus not yet ready for a derivatives market as supported by the study done by Mugo (2009).

4.5 Chapter Summary

This chapter reviewed the findings of the study into the factors that lead to a successful derivatives exchange and the Kenyan situation with regard to these factors. The following table summarizes these findings:

Table 4.5: Summary of findings from comparative study of Korea, Mauritius and Kenya on factors that contribute to the success of a derivatives exchange

FACTOR OF SUCCESS	MEASURE	YARDSTICK	KOREA	MAURITIUS	KENYA	STATUS FOR KENYA
Economic development	GDP & GDP growth rate	Growing/increasing	High & increasing rate	Low but increasing	Low but increasing	<i>Improvement needed</i>
	Interest rates	Low & decreasing	Low & decreasing	High but decreasing	High & increasing	<i>Improvement needed</i>
	Inflation rates	Low & declining	Low & declining	High & increasing	High & increasing	<i>Improvement needed</i>
Political stability	FDI net inflows	Increasing inflows	Increasing inflows	Increasing inflows	Increasing inflows	<i>Ready</i>
	No. of tourist arrivals Change of presidents	Increasing arrivals Little or no change	Stable political climate	Stable political climate	Stable political climate	<i>Ready</i>
	EIU political stability index	Economic distress is characterised by a decline of more than 4% in the GDP growth rate and a GDP per capita of less than \$3000	No economic distress	Economic distress characterized by a decline of more than 4% of GDP growth	Economic distress characterized by both a decline of more than 4% of GDP growth and a per capita of less than \$3000	<i>Improvement needed</i>
Infrastructural systems	Order flow management Price stabilization features Market – making	Presence of all stated factors being operationalised on an automated system	Efficient & automated trading system and processes	Efficient & automated trading system and processes	Automated trading system. However specific processes are	<i>Improvement needed</i>

	mechanisms Settlement & clearing procedures Exchange monitoring, control & enforcement				incomplete	
Legal & Regulatory framework	IFRS accounting	Compliant	Compliant	Compliant	Compliant	Ready
	SRO	Present	Present	Not present	Not present	Improvement needed
	Derivatives laws & regulations	Requisite laws exist	Requisite laws exist	Requisite laws exist	No derivatives laws	Improvement needed
	Favourable tax environment	Present	Present	Present	Present	Ready
Developed capital markets	Market capitalization	High & increasing	High	Low but increasing	Low but increasing	Improvement needed
	Trading volumes	High & increasing	High	Low but increasing	Low but increasing	Improvement needed
	No. of listed companies	Many & increasing	760	87	58	Improvement needed
Educating market participants	Mode of education Frequency of education	Extensive education before & during introduction of a derivatives exchange	Extensive training of market participants	Extensive training of market participants	Extensive training of market participants	Ready
Large & active investor population	Retail investors Institutional investors	Large & active investor population	Large & active investor population	Small & inactive investor population	Small & inactive investor population	Improvement needed
Feasibility study		Feasibility study done	Extensive feasibility study done	Feasibility study done	In process	

Source: World Bank database; NSE, Korea Exchange, Stock Exchange of Mauritius

It was found that economic development, political stability, developed capital market, the types of products traded, infrastructural systems in place, the legal and regulatory framework, education of the market participants, and many and active investors are important factors that need to be in place for a derivatives exchange to be successful. This finding is consistent with studies done by Jobst (2007, 2008); Mugo (2009); Tsetsekos and Varangis (1997); Yu-Kyung and Mugo-Waweru (2012); and Unis (1998). It was also found that a number of other factors are needed. These include: low transaction fees, data dissemination, a robust financial market, a risk management framework, a sponsor and support from all stakeholders.

When reviewing the Kenyan situation, it was found that Kenya does not possess the required factors in sufficient scale to have a successful derivatives exchange. A summary of the factors is given below:

Kenya's economy is not very strong, however it is growing. Its GDP and GDP growth rate are low, but improving. Its inflation rate and interest rates are high and unfavourable. Therefore, the indicators for economic development show that Kenya is not yet ready to establish a derivatives exchange. The political environment has been generally stable with regard to governance, however other measures of political stability (which include GDP growth rate and GDP per capita) highlight that Kenya has potential risk of political instability making it unsuitable for a derivatives exchange.

Kenya's capital market is not as developed as it should be when considering the introduction of a derivatives exchange. It has a relatively small market capitalization, low trading volumes and turnover and very few listed companies. Thus, given that improvement is required, it may struggle to achieve the required scale of trading volumes and liquidity that makes a derivatives market successful.

Kenya's infrastructural systems were found to be fully automated and efficient; however key requirements for a derivatives market including market makers and margin

requirements will have to be introduced before an exchange is set up. In this regard, improvement is also required.

When the legal and regulatory framework was reviewed, it was found that Kenya is fully compliant with International Financial Reporting Standards and has a favourable tax dispensation for investors. However, a key requirement is derivatives regulation which is not in place. This must be finalized before the exchange is established.

Education of market participants was found to be sufficient for the existing capital market regulations and products, therefore it can be inferred that the same will be applied for the derivatives market and its products. However, the number of active investors was found to be relatively few which would hamper the required level of trading and liquidity needed for a successful derivatives market.

Given the findings that the required factors are not sufficiently in place as highlighted by the prevailing conditions, it would not be recommended to establish a derivatives exchange just yet. This is consistent with the findings of the study carried out by Mugo (2009) on the factors necessary for the success of a derivatives exchange.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study set out to determine whether Kenya can establish a successful derivatives exchange with reference to the factors that contribute to the success of a derivatives market. The specific objectives of the study were: firstly, to examine the factors that enhance the success of a derivatives exchange and secondly, to determine how prepared Kenya is to introduce a derivatives exchange based on the factors of success. In order to achieve these objectives, both qualitative and quantitative research methods were used and both primary and secondary data was collected. This data was analysed using the comparative study method which compared benchmark indicators with those currently existing in Kenya. The conclusions made are highlighted in this chapter.

This chapter gives an introduction by stating the objectives of the study and the methodology used to collect the data. It then highlights the findings of the research based on each objective. The chapter then concludes by giving recommendations based on the findings of the study and highlights the limitations encountered.

5.2 Summary of findings

5.2.1 The success factors of a derivatives exchange

With reference to the first objective which examined the different factors that contribute to the success of a derivatives exchange, it was found that economic development, political stability, developed capital market, the types of products traded, infrastructural systems in place, the legal and regulatory framework, education of the market participants, and many and active investors are necessary factors for a successful derivatives exchange. This is in line with what the following scholars found: Jobst (2007, 2008); Mugo (2009); Tsetsekos and Varangis (1997); Yu-Kyung and Mugo-Waweru (2012); and Unis (1998).

Other factors were also found to be important when establishing a derivatives exchange. These factors include: transaction fees, data dissemination, a robust financial market, a risk management framework, a sponsor and support from all stakeholders.

5.2.2 Success factors of a derivatives exchange: the Kenyan context

With reference to the second objective which examined the various success factors in light of the Kenyan context, it was found that Kenya is not yet ready to establish a derivatives market that would be considered successful. The country's economic development, as measured by its GDP and GDP growth rate, its inflation and interest rates, is on a growth path. However, the economy is still weak and this affects capital market development which has a direct bearing on the establishment of a derivatives market and its subsequent success.

The political climate has been stable with regard to governance, yet there is a risk of political instability as measured by the GDP growth rate and the GDP per capita. This instability is likely to affect the country's economic development negatively which similarly does not bode well for a derivatives market. The capital market in Kenya has made great strides over the years in terms of growth yet, when compared with markets that are successful in both derivatives and other trading, it is still lagging behind with market capitalization and the number of listed companies. These factors are important in providing the required liquidity for a vibrant market. Therefore, the level of market development in existence is not sufficient and will do well with some improvement to assist in ensuring that a derivatives market is successful.

The infrastructural systems that are in place cover market mechanisms such as trading and order systems, a demutualized exchange, appropriate price stabilization features, and vigilant monitoring and control of the exchange. The aspects of infrastructure that are lacking include market makers, margin requirement systems, clearing and settlement houses and modes of information dissemination. With regard to the legal

and regulatory foundation that is required, regulation on derivatives trading and products will need to be formulated. The number of active investors in the stock exchange are very few and more people will have to be encouraged to participate in stock and subsequently, derivative trading. Investor and market player education was the silver lining amongst the clouds. It is currently practiced and will most likely continue to do so before and after the derivatives exchange is established.

5.3 Conclusion

Given the findings of this study, after assessing the prevailing conditions in Kenya with the regard to the factors of a successful derivatives exchange; we can conclude that Kenya is not yet ready to establish a successful derivatives exchange. It's economic development, political climate, infrastructural systems, legal and regulatory frameworks, capital markets and investor population need to be improved to increase the probability of establishing a successful exchange.

5.4 Recommendations and implications

Despite the fact that the factors that were being considered were not entirely favourable, all is not lost. The following measures can be taken in preparation of establishing a derivatives exchange:

5.4.1 Regulators:

The regulators namely: the CMA, the NSE and the CDSC can begin to set the stage for this preparation by developing specific regulations for derivative trading, encouraging more companies to get listed on the securities exchange, setting the framework to enable the NSE to be a clearing house and the CDSC to expand its settlement function to cover derivatives, and finally establishing margin systems that are essential for the trading of derivatives.

5.4.2 Market Players:

The market players who include: the investors, stock brokers, fund managers and investment advisors should own the process of establishing a derivatives exchange and work hand in hand with the regulators to put an exchange in place. Brokers and fund managers interact closely with investors, and so they are best placed to encourage more participation in the stock market and subsequently, the derivatives market. They are also strategically placed to disseminate information and educate investors on derivatives trading. This position should not be wasted.

5.4.3 Academicians

Academic researchers can build on the knowledge of how to improve the factors necessary for a derivatives exchange that are yet to reach the required level of success.

5.5 Suggestions for further research

This study focused on the factors that cause a derivatives exchange to be successful and established if these factors are present in Kenya. Future research could delve deeper into how each factor would cause a derivatives exchange in Kenya to flourish. Further, another method of analysis other than a comparative study; and other emerging or African countries could be explored to analyse or compare the factors of success found in this research. Finally, a longitudinal study of the factors of a successful derivatives exchange could be carried out to find out if there is improvement over time.

5.6 Limitations

The use of a comparative study as a method of analysis had not been used by many scholars in researching on derivatives markets, which made it difficult to draw from specific studies. Therefore, inferences had to be made from the few who had used it in

the derivatives field and the many who had used it in other fields to come up with a specific way to analyse the data. In addition, the response rate of 66% was not as high as expected because it was not easy to get the respondents from all capital market players and regulators to give their feedback, even after numerous reminders.



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Appendix 1:

WFE 54 Members, as of October 2011

- 1 Amman Stock Exchange
- 2 Athens Exchange
- 3 Australian Securities Exchange
- 4 Bermuda Stock Exchange
- 5 BM&FBOVESPA S.A.
- 6 BME Spanish Exchanges
- 7 Bolsa de Comercio de Buenos Aires
- 8 Bolsa de Comercio de Santiago
- 9 Bolsa de Valores de Colombia
- 10 Bolsa de Valores de Lima
- 11 Bolsa Mexicana de Valores
- 12 Bourse de Casablanca
- 13 Bourse de Luxembourg
- 14 BSE Limited
- 15 Bursa Malaysia
- 16 CBOE Holdings, Inc.
- 17 CME Group
- 18 Colombo Stock Exchange
- 19 Cyprus Stock Exchange
- 20 Deutsche Börse AG
- 21 The Egyptian Exchange
- 22 Gretai Securities Exchange
- 23 Hong Kong Exchanges and Clearing
- 24 Indonesia Stock Exchange
- 25 Intercontinental Exchange ICE
- 26 International Securities Exchange - ISE
- 27 Irish Stock Exchange
- 28 İstanbul Menkul Kıymetler Borsası (İMKB)
- 29 Johannesburg Stock Exchange
- 30 Korea Exchange
- 31 London Stock Exchange Group
- 32 Malta Stock Exchange
- 33 Moscow Interbank Currency Exchange
- 34 NASDAQ OMX
- 35 National Stock Exchange of India Limited
- 36 NYSE Euronext
- 37 Osaka Securities Exchange
- 38 Oslo Børs
- 39 Philippine Stock Exchange
- 40 RTS Stock Exchange
- 41 Saudi Stock Exchange (Tadawul)
- 42 Shanghai Stock Exchange
- 43 Shenzhen Stock Exchange
- 44 Singapore Exchange

- 45 SIX Swiss Exchange
- 46 Stock Exchange of Mauritius
- 47 Stock Exchange of Thailand
- 48 Taiwan Futures Exchange (TAIFEX)
- 49 Taiwan Stock Exchange (TWSE)
- 50 Tel-Aviv Stock Exchange
- 51 TMX Group Inc.
- 52 Tokyo Stock Exchange Group, Inc.
- 53 Warsaw Stock Exchange
- 54 Wiener Börse AG

Source: World Federation of Exchanges

Appendix 2: African Stock Exchanges

Botswana	• Botswana Stock Exchange (BSE)
Egypt	• Egyptian Exchange (EGX)
Ghana	• Ghana Stock Exchange (GSE)
Kenya	• Nairobi Stock Exchange (NSE)
Malawi	• Malawi Stock Exchange (MSE)
Mauritius	• Stock Exchange of Mauritius (SEM)
Morocco	• Casablanca Stock Exchange (Bourse de Casablanca)
Namibia	• Namibian Stock Exchange (NSX)
Nigeria	• Nigerian Stock Exchange
South Africa	• Johannesburg Stock Exchange (JSE) • STRATE (Central Securities Depository (CSD) for the electronic settlement of all financial instruments in South Africa)
Sudan	• Khartoum Stock Exchange (KSE)
Swaziland	• Swaziland Stock Exchange (SSX)
Tanzania	• Dar-Es-Salaam Stock Exchange (DSE)
Tunisia	• Bourse de Tunis (Tunis Stock Exchange)
Uganda	• Uganda Securities Exchange (USE)
West Africa	• Bourse Regionale des Valeurs Mobilières (Regional Stock Exchange for West Africa)
Zambia	• Lusaka Stock Exchange (LuSE)

Source: World Stock Exchanges

Appendix 3: Questionnaire

The objective of this questionnaire is to determine what factors are necessary for establishing a successful derivatives exchange. In addition, to determine whether Kenya possesses these factors that are considered useful for establishing a derivatives exchange.

Section 1: General Information *(Tick as appropriate)*

1. Which category best describes the company you work for:

Stockbroker/Investment Bank ☐

Investment advisor ☐

Fund manager ☐

Commercial bank ☐

Other: (please specify).....

2. How long have you worked for the company?

Less than a year ☐

Between 1 and 5 years ☐

More than 5 years ☐

Section 2: Factors necessary for a derivatives exchange

3. For a derivatives exchange to thrive there needs to be some factors in place. On the scale given, indicate how necessary the following factors are:

Factors	Level of Necessity				
	Extremely necessary	Necessary	Neutral	Not necessary	Extremely unnecessary
Economic development					
Political stability					
Settlement & clearing systems					
Legal & regulatory framework					
Developed capital market					
Educated market participants					
Many & active investors					
Types of products traded					

4. State any other factors which you deem necessary for a derivatives exchange to thrive in Kenya, and why

Section 3: Infrastructural Systems

5. Is there a system at the Central Depository and Settlement Corporation (CDSC) that manages the flow of orders? Yes____/No____
If yes, how effective is the system?
Very effective ____ Effective ____ Not effective ____
6. Does the market currently have price stabilization features (such as circuit breakers)?
Yes ____/ No ____
If yes, how effective is the system?
Very effective ____ Effective ____ Not effective ____
7. What is your view of the current settlement and clearing procedures?

8. What is your view of the CDSC's monitoring, control and enforcement functions?

Section 4: Legal and Regulatory Framework

9. Indicate on the scale given, how effectively the regulators of the Kenyan capital market regulate the following factors:

Area of regulation	Level of Effectiveness				
	Very effective	Effective	Neutral	Ineffective	Very ineffective
Market access and participation					
Listing of companies					
Timely, relevant and continuous disclosure of information related to listed companies					
Trading					
Order rules for entry					
Display and execution of orders which clearly establish priority					
Transparency and supervision of market activities					
Clearing of trades and the settlement process					
Business continuity planning					

10. What is your view of regulation of the capital markets in Kenya in general?

Section 5: Education of Market Participants

11. How often are market players and investors educated on market issues by the following parties?

	Monthly	Quarterly	Semi-annually	Annually	Never
CMA					
NSE					
CDSC					
KASIB					

12. What medium do the following organisations use in carrying out investor education?

Media	CMA	NSE	CDSC	KASIB
Radio				
Television				
Social media				
Newspapers				
Brochures				
Website				
Roadshows				
Seminars/Workshops				

Any other medium? Please specify.....

13. What more can be done to ensure that the process of educating market participants is wholistic and sustained?

Section 6: Derivative Products

14. Select which types of derivative products would most suitable for a Kenyan derivatives exchange

Product	
Equity index futures	
Currency futures	
Interest rate futures	
Commodity futures	
Options	
Swaps	

Any other type of product? Please specify

.....

Appendix 4: Comparison of Economic Indicators

Comparison of Kenyan and South Korean Economic Factors (Kenya $T_0 = 2011$; Mauritius $T_0 = 2010$ and Korea $T_0 = 1996$)

	Unit		T_{-5}	T_{-4}	T_{-3}	T_{-2}	T_{-1}	T_0
GDP (\$ Millions)	US\$	Kenya	22,504	27,236	30,465	30,580	32,198	33,620
		Korea	308,185	329,885	362,135	423,434	517,118	557,643
		Mauritius	6,385	6,283	6,507	7,792	9,641	8,834
GDP growth rate	%	Kenya	6.33	6.99	1.53	2.74	5.76	4.38
		Korea	9.39	5.88	6.13	8.54	9.17	7.00
		Mauritius	5.75	1.24	3.95	5.88	5.52	3.03
Inflation rate, consumer prices	%	Kenya	14.45	9.76	26.24	9.23	3.96	14.02
		Korea	9.30	6.31	4.75	6.26	4.48	4.92
		Mauritius	4.71	4.94	8.93	8.80	9.73	2.55
Real Interest rate	%	Kenya	5.43	7.31	0.71	5.08	12.16	2.60
		Korea	-0.60	2.21	2.10	0.62	1.50	3.54
		Mauritius	14.05	16.10	13.07	9.11	4.69	9.36

Source: World Bank data

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Appendix 5: Comparison of Political Stability Indicators

Comparison of Kenyan, Korean and Mauritian Political Stability Indicators (Kenya T_0 = 2011; Mauritius T_0 = 2010 and Korea T_0 = 1996)

			T_{-5}	T_{-4}	T_{-3}	T_{-2}	T_{-1}	T_0
FDI net inflows (Millions US \$)	US \$	Kenya	50.7	729	95.6	116.2	178.1	335.2
		Korea	1,179.80	728.3	588.1	809	1,775.80	2,325.40
		Mauritius	41.7	106.7	340.7	377.7	256.7	429.9
GDP growth %	%	Kenya	6.33	6.99	1.53	2.74	5.76	4.38
		Korea	9.39	5.88	6.13	8.54	9.17	7
		Mauritius	5.75	1.24	3.95	5.88	5.52	3.03
GDP per capita, PPP	US \$	Kenya	1,440.35	1,545.81	1,563.65	1,586.04	1,645.52	1,709.51
		Korea	8,969.57	9,613.50	10,325.95	11,354.51	12,465.17	13,481.46
		Mauritius	10,157.51	10,816.93	11,712.43	12,550.59	13,035.00	13,606.56
Number of tourist arrivals (Thousands)		Kenya	1,464	1,686	1,141	1,392	1,469	Not available
		Korea	Not available	Not available	Not available	Not available	3,753	3,684
		Mauritius	761	788	907	930	871	938

Source: World Bank data

Appendix 6: Comparison of Capital Market Indicators

**Table 4.5: Comparison of Kenyan, Korean, Mauritian Capital Market Indicators
(Kenya T_0 = 2011; Mauritius T_0 = 2010 and Korea T_0 = 1996)**

		T_{-5}	T_{-4}	T_{-3}	T_{-2}	T_{-1}	T_0
Equity market capitalisation (Millions)	Kenya	9,895	10,639	10,674	10,427	14,587	10,853
	Korea	96,373	107,448	139,420	191,778	181,955	138,817
	Mauritius	2,645	3,540	6,035	3,343	4,815	5,679
Trading volumes (Millions)	Kenya	1,454	1,938	5,395	3,160	8,546	5,722
	Korea	4,094	7,064	10,398	10,911	7,648	7,785
	Mauritius	306	401	300	318	700	483
Equity turnover (Millions)	Kenya	1,187	1,108	1,223	477	1,379	976
	Korea	85,000	116,000	212,000	286,000	185,000	178,000
	Mauritius	150	181	412	349	333	375
Number of listed companies	Kenya	52	54	56	55	55	58
	Korea	686	688	693	699	721	760
	Mauritius	41	84	91	93	89	87

Source: Nairobi Securities Exchange; Stock Exchange of Mauritius, Korea Exchange and the African Securities Exchanges Association

Appendix 7: Number of accounts registered with Central Depository and Settlement Corporation (CDSC)

CDSC ACCOUNTS

	ACCOUNT TYPE	NO. OF ACCOUNTS OPENED	CUMULATIVE ACCOUNTS	ACTIVE ACCOUNTS
2004				
	FC	1		
	FI	17		
	LC	1,083		
	LI	2,635		
2005		3,736		
	EC	4	4	
	EI	48	48	
	FC	36	37	
	FI	569	586	
2006	LC	7,744	8,827	
	LI	66,032	68,667	
		74,433	78,169	
	EC	25	29	17
	EI	287	335	194
2007	FC	152	189	106
	FI	3,545	4,131	2,259
	LC	53,551	62,378	40,800
	LI	468,730	537,397	355,818
		526,290	604,459	399,194
2008	EC	65	94	35
	EI	606	941	448
	FC	167	356	139
	FI	1,498	5,629	2,337
	LC	16,919	79,297	36,717
2008	LI	221,682	759,079	348,176
		240,937	845,396	387,852
	EC	342	436	251
	EI	7,986	8,927	6,915

2009	FC	222	578	182
	FI	2,586	8,215	3,033
	LC	109,533	188,830	108,568
	LI	843,979	1,603,058	867,025
		964,648	1,810,044	985,974
	EC	13	449	54
	EI	79	9,006	772
	FC	144	722	150
	FI	334	8,549	879
2010	LC	2,143	190,973	14,988
	LI	52,836	1,655,894	150,934
		55,549	1,865,593	167,777
	EC	49	498	60
	EI	92	9,098	978
	FC	621	1,343	248
	FI	441	8,990	1,395
	LC	3,988	194,961	13,052
	LI	120,918	1,776,812	232,545
2011		126,109	1,991,702	248,278
	EC	19	517	52
	EI	125	9,223	594
	FC	445	1,788	290
	FI	363	9,353	1,381
	LC	1,376	196,337	9,527
	LI	36,189	1,813,001	180,331
		38,517	2,030,219	192,175

Source: CDSC

Key:

EC - East African Company

EI - East African Individual

FC - Foreign

Company

FI - Foreign

Individual

LC - Local Company

LI - Local Individual

Appendix 8: The ranking of the factors of a successful derivatives market

Factors of a successful derivatives market	Extremely necessary	Necessary	Neutral	Not necessary	Extremely unnecessary
Economic development	67.4%	30.2%	2.3%	0.0%	0.0%
Political stability	60.5%	32.6%	7.0%	0.0%	0.0%
Infrastructural systems	74.4%	20.9%	4.7%	0.0%	0.0%
Legal & regulatory framework	76.7%	20.9%	2.3%	0.0%	0.0%
Developed capital market	69.8%	25.6%	4.7%	0.0%	0.0%
Educated market participants	65.1%	30.2%	4.7%	0.0%	0.0%
Many & active investors	34.9%	48.8%	11.6%	4.7%	0.0%
Types of products traded	48.8%	39.5%	9.3%	2.3%	0.0%
Total	62%	31%	6%	1%	0%