RELATIONSHIP BETWEEN RISK AND RETURN OF STOCKS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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DECLARATION

This Research Project is my original work and has not been presented for an award of a degree in any other university or learning institution.

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This Research Project has been submitted for examination with my approval as the University supervisor.

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DEDICATION

I dedicate this project to my wife, Carmel Mwangi, for her unconditional support and help.

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LIST OF ABBREVIATIONS

APT	Arbitrage Pricing Theory
CAPM	Capital-Asset Pricing Model
CMA	Capital Markets Authority
EGARCH	Exponential Generalized AutoRegressive Conditional Heteroskedasticity
GARCH	Generalized AutoRegressive Conditional Heteroskedasticity
GARCH-M	Generalized AutoRegressive Conditional Heteroskedasticity in Mean
ICAPM	Intertemporal Capital-Asset Pricing Model
MIDAS	Mixed Data Sampling
MPT	Modern portfolio theory
NSE	Nairobi Securities Exchange
SDF	Stochastic Discount Factor

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ABSTRACT

Every financial decision contains an element of risk and an element of return. The relationship between risk and return exists in the form of a risk-return trade-off, by which it is meant that it is only possible to earn higher returns by accepting higher risk. This risk-return trade off is central to investment. This study sought to establish the relationship between risk and return of stocks listed at the Nairobi Securities Exchange during the period 1st January 2009 to 6th June 2014. Descriptive research design was employed and the study population consisted of all the companies listed in the Nairobi Securities Exchange. The return of the stocks of the companies that made up the 20 Share Index, the return of the market and the Beta of the stocks were calculated. The research findings revealed the existence of a statistically significant weak negative relationship between risk and return for stocks listed on the Nairobi Securities Exchange. These findings go against the fundamentals of finance that the higher the risk the higher the return. They show an underdeveloped market where the fundamentals of finance do not hold. A lot needs to be done to develop the Nairobi Securities Exchange as a market. It needs to get bigger in size and it should also offer more products. NSE needs to increasingly play an educational role and embark on a vigorous campaign to market itself and educate prospective investors about the opportunities available in the market and how to effectively make use of them. The efforts by NSE and CMA to improve public awareness of the opportunities available in the capital markets in Kenya need to be supported by using a variety of means of communication such as media campaigns either done through the radio, television and newspapers, engaging in personal meetings with eligible firms and potential investors, and distribution of reading materials to firms and prospective investors across the country. The NSE and CMA should build a list of potential issuers of both shares and debt and educate them so as to improve their awareness of the benefits and relevance of capital markets for their operations. In addition the two institutions should set up branch offices at the county levels to facilitate outreach to the public. Investor education may also be done through incorporating information on investment and the capital markets in the school and college syllabus to enhance the awareness by the younger people of Kenyans who make up a sizable proportion of the total population.

CHAPTER ONE: INTRODUCTION

1.1 Background of Study

Every financial decision contains an element of risk and an element of return. The relationship between risk and return exists in the form of a risk-return trade-off, by which it is meant that it is only possible to earn higher returns by accepting higher risk. If an investor wishes to earn higher returns, then the investor must appreciate that this will only be achieved by accepting a commensurate increase in risk. Risk and Return are positively correlated; an increase in one is accompanied by an increase in the other. The implications for the financial manager in evaluating a prospective investment project is that an effective decision about the projects value to the firm cannot be made simply by focusing on its level of return; the projects level of risk must also be simultaneously considered. This risk-return trade off is central to investment (Mcmenamin, 1999).

In financial management today the treatment of risk is the main element in financial decision making. Key current questions involve how risk should be measured, and how the required return associated with a given risk level is determined. A large body of literature has developed in an attempt to answer these questions. However, risk did not always have such a prominent place. Prior to 1952 the risk element was usually either assumed away or treated qualitatively in the financial literature. In 1952 an article by an economist, Markowitz (1952) suggested a powerful yet simple approach for dealing with risk. In the two decades since, the modern theory of portfolio management has evolved (Modigliani and Pogue, 1973).

A financial decision typically involves risk. For example, a company that borrows money faces the risk that interest rates may change, and a company that builds a new factory faces the risk that product sales may be lower than expected. These and many other decisions involve future cash flows that are risky. Investors generally dislike risk, but they are also unable to avoid it. The valuation for shares and debt securities shows that the price of a risky asset depends on its expected future cash flows, the time value of money, and risk. To make effective financial decisions, managers need to understand what causes risk, how it should be measured and the effect of risk on the rate of return required by investors (Peirson, Brown, Easton, Howard, and Pinder, 2011).

1.1.1 Risk

Kuhlemeyer (2004) defines risk as the variability of returns from those that are expected. It could either be systematic risk which is the variability of return on stocks or portfolios associated with changes in return on the market as a whole or unsystematic risk which is the variability of return on stocks or portfolios not explained by general market movements. This last is avoidable through diversification. Risk is also the chance that the actual outcome will differ from the expected outcome. Mcmenamin (1999) explains risk as the chance that the actual return will differ from the expected return.

A share's risk can be analyzed in two ways, either on a stand-alone basis, where the share is considered in isolation, and on a portfolio basis, where the stock is held as one of a number of stocks (Brigham & Houston, 2004). Risk is present whenever investors are not certain about the outcomes an investment will produce (Peirson et al, 2011).

The risk of a stock can be partitioned into systematic risk and specific risk. The specific risk or non-systematic risk is the risk associated with a given asset. The systematic risk or market risk is the risk common to all securities. Specific risk can be diversified away by buying a variety of different assets, since the specific risks will cancel each other out. If several stocks have the same return, we are better of owning all of them than one of them, because specific risk is removed. A stock's risk or volatility will be indicated by the stock's beta which is a measurement of risk of a particular stock relative to the risk of the entire stock market. Before choosing a particular stock, you can check the beta of that particular stock to decide how risky the particular stock is (Muiprom, 2009).

To measure a stock's market risk, a stock's volatility relative to the market is demonstrated (i.e., the degree of co-movement with the market return.). It is obtained by running a regression of past returns of a security against past market returns. (Market return is the weighted average of all stocks' returns at a certain time.). The slope of the regression line (called the security's characteristic line) is defined as the beta coefficient for the security. If the beta of a particular stock is one, then that stock has the same risk as that of the market. If the beta value is greater than one, then that particular stock is riskier than its benchmark and vice versa (Muiprom, 2009).

Broadly, risks that exist in the stock market can be categorized into unsystematic risk which is firm specific as a result of company specific factors and systematic risk which is market related risk in consequence of market related factors. According to

Markowitz Portfolio Theory (Markowitz (1959), as cited in Isa, Puah, & Yong, 2008), unsystematic risk can be diversified away through diversification of portfolio and thus the capital markets will not reward investors for bearing this type of risk. Instead, the capital markets will only reward investors for bearing systematic risk that cannot be eliminated through diversification. Since the return from investment in stock market is uncertain, knowing the risk and return relationship in the stock market will be crucial for investors to maximize their return and minimize their risk, and thus ensuring the attractiveness of investing in stock market.

1.1.2 Return

Return on the other hand is income received on an investment plus any change in market price, which is usually expressed as a percent of the beginning market price of the investment (Kuhlemeyer, 2004). An investment's return is measured in terms of cash flows, positive and negative. Measuring return is usually a problematic exercise since we are dealing with the future and the future is uncertain. It represents the investor's best estimate of the investments future returns. When faced with making an investment decision, the relevant variables are not known with certainty and consequently they have to be estimated. The return is determined ex ante (before the event), that is, before the investment is made. Frequently in finance we will be measuring returns over the period of a year so it will often represent the annual rate of return. When an investment is held for a period greater or less than a year it is best to convert the return to an annual rate (Mcmenamin, 1999).

To estimate the share's future return, a number of possible future values are intuitively considered and as such, the return is therefore defined as a weighted average of possible returns where the weightings are the respective probabilities of each possible return occurring (Mcmenamin, 1999).

Return is a best estimate of what return of a stock might be over some future time period. The importance of returns in investments cannot be overstated. For corporate managers, return on their company's stock is a central element of the company's cost of capital, and thereby affects which investment projects the company decides to undertake. Even ordinary consumers are affected by return estimates. The prices charged by many utility companies are regulated to ensure that the utility earns a "fair rate of return", defined by regulatory practice as the utility's cost of capital. Unfortunately, returns are as elusive as they are important. There is no absolute agreement among finance professionals on how returns should be estimated (Pastor, 2001). This research study argues that the best estimates are produced by combining finance theory with historical returns data.

1.1.3 Risk and Return

The return on an investment and the risk of an investment are basic concepts in finance since a large part of it deals with the tradeoff between risk and return. Return on an investment is the financial outcome for the investor. Investors can attach a probability to each possible shilling return that may occur. They can draw up a probability distribution for the shilling returns from the investment. A probability

distribution is a list of the possible shilling returns from the investment together with the probability of each return (Peirson et al, 2011).

If investors' expectations of the returns from an investment can be represented by a normal probability distribution, then the standard deviation is a relevant measure of risk for a risk-averse investor. If two investments offer the same expected return, but differ in risk, then a risk-averse investor will prefer the less risky investment (Peirson et al, 2011).

Further, it has been shown that a risk-averse investor is prepared to accept higher risk for higher return, with the result that the required return on a particular investment increases with the investor's perception of its risk. The standard deviation of the return from a single investment is a relevant measure of its riskiness in cases where an individual is considering the investment of all available funds in one asset. However, it is exceptional to limit investments in this way. Most people investing in shares are likely to hold shares in a number of companies. In other words, people typically invest their wealth in a portfolio of assets and will be concerned about the risk of their overall portfolio. This risk can be measured by the standard deviation of the returns on the portfolio. When an individual stock is considered, an investor will be concerned about the risk of that stock as a component of a portfolio of stocks. What we need to know is how individual portfolio components (stocks) contribute to the risk of the portfolio as a whole (Peirson et al, 2011).

Various theories relating risk and return have been developed about 60 years ago. Markowitz (1952) developed the portfolio theory showing investors how to create

portfolios of individual investments to optimally trade off risk versus return. Sharpe (1964), as cited in Isa, Puah, & Yong, 2008) and Lintner (1965), as cited in Isa, Puah, & Yong, 2008) marked the birth of asset pricing theory linking the return of an asset to its market risk using the Capital Asset Pricing Model (CAPM). Ross (1976), as cited in Isa, Puah, & Yong, 2008) formulated Arbitrage Pricing Model (APM) as an alternative to CAPM. APM relates return of an asset to unidentified risk factors, which can be more than one. The unidentified risk factors could be anything but realistically it is most likely to be macroeconomic variables such as interest rate, inflation rate and so on. There are many other theories developed thereafter, some of them are modification of CAPM and APM. All these theories claim the possibility to estimate return of an investment.

1.1.4 Nairobi Securities Exchange

The Nairobi Securities Exchange, Kenya's only securities market was formerly started by six brokers in 1954. The exchange was formed outside Government control in line with the London Stock Exchange as it then existed. The direct interest of the government on the exchange gradually subsided and it was left entirely in the hands of private brokers. The Capital Market Authority is supposed to introduce the government's hand in it. The NSE acts as an agency or medium for promoting and facilitating contacts between buyers and sellers of securities (Mwega & Seshamani, 1997). The number of both local and foreign companies, and some cross-listed in the exchange was 56 companies by the end of 2009 (Yona, 2011).

Stock markets like the Nairobi Securities Exchange play an important role in stimulating economic growth of a country. They help to channel funds from

individuals or firms without investment opportunities to firms that have them and thus improve the country's economic efficiency. It is the lifeblood of the economy of a nation that concerns individuals, firms as well as the government. However, a stock market is a volatile financial market, in which various factors can affect the return that investors can gain from investing in stocks. The uncertainty of reward from stock market is translated into risks that investors have to bear for investing in stocks (Isa, Puah, & Yong, 2008).

A healthy stock market has been considered essential for economic growth and is expected to contribute improvement in productivity. The relationship between risk and return has been extensively tested for the developed stock markets such as those of USA, Europe and Australia and to a lesser extent for the developing stock markets (Hasan, Kamil, Mustafa, & Baten, 2012).

Stock market research is essential to good financial and investment decision making. It will help to determine the market price and trading volume for the stock, high and low price for the stock over different periods and the earnings for the company. To ascertain the right choice of a security or portfolio to an investor, the level of risk that the stock carries is important. An estimation of the risk-return profile of a security or portfolio is an important aspect in investment management (Thomas, 2012).

1.2 Research Problem

Ondari (2012) carried out a study to establish the risk-return profiles in various sectors of NSE. Initial analysis was done on the sectors' riskiness based on standard

deviation and beta computations. Cherutich (2010) carried out a study focused on comparative evaluation of portfolio analysis models of Modern Portfolio Theory and Capital Asset Pricing Model using historical data of stock prices, trading volumes of shares, the NSE 20 share indices and the 91-·day treasury bill rates for the years 2001 to 2005. Mwambu (2009) on the other did a study on the risks and factors that affect returns on the Nairobi Stock Exchange. The study identified sources of such risks; those that can be eliminated through diversification (unsystematic) and those that could not be eliminated through such (systematic risk). Systematic or covariance risk was calculated by a standardized measure called Beta, which is a tendency for a company's returns to move together with market - wide returns. Beta and a number of risk factors apparently exert considerable influence on returns on the Nairobi Stock Exchange.

There have been a number of valuable studies of risk and expected return at the Nairobi Securities Exchange, namely Ondari (2012), Cherutich (2010) and Mwambu (2009), some of which present evidence of a relationship between risk and return. However, none of these studies provides conclusive results on the relationship between risk and expected returns from stocks on the Nairobi securities exchange. The research question is; what is the relationship between risk and return of stocks listed at the Nairobi Securities Exchange?

1.3 Research Objective

The objective of this study is:

To establish the relationship between risk and return of stocks listed at the Nairobi Securities Exchange

1.4 Value of the Study

This study is important for the current and future shareholders of a company who can get an insight into the efficiency of their investments. For example if a company has a high amount of risk, it may be expected to have a higher return if not; it is not very efficient.

This study will also be significant for the academia since it will add into the existing body knowledge in that it will form part of MBA projects repository at The University of Nairobi which will be useful to students.

It will also assist the government and regulators since they will have information with which to act to ensure proper functioning of the market and as such eliminate any unnecessary anomalies in the market. Competitors could also use it to assess the activities of other companies in the same industry and thus gauge their position. This would assist them to effectively compete in the market.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This aspect of the study reviews the various literatures related to the topic under consideration in order to uncover critical facts and findings which have already been identified by previous researchers.

2.2. Review of Theories

The following three theories explain the relationship between risk and return, these are; Portfolio Theory by Markowitz (1952), Capital Asset Pricing Model (CAPM) by Sharpe (1964) and Arbitrage Pricing Theory (APT) by Ross (1976). CAPM builds on the model of portfolio selection developed by Harry Markowitz in 1952 while APT builds on CAPM. CAPM and APT are used to predict or estimate financial asset prices and help the investors to plan and to take an efficient investment decisions.

2.2.1 Portfolio Theory

In 1952 *The Journal of Finance* published an article titled "Portfolio Selection" authored by Markowitz (1952). The ideas introduced in this article have come to form the foundations of what is now popularly referred to as Modern Portfolio Theory (MPT). Initially, MPT generated relatively little interest, but with time, the financial community strongly adopted the thesis, and now 50 years later, financial models based on those very same principles are constantly being reinvented to incorporate all the new findings that result from that seminal work. An important outcome of the research generated due to the ideas formalized in MPT is that today's investment professionals and investors are very different from those 50 years ago. Not only are they more financially sophisticated, but they are armed with many more tools and concepts. This allows both investment professionals to better serve the needs of their

clients, and investors to monitor and evaluate the performance of their investments. Though widely applicable, MPT has had the most influence in the practice of portfolio management. In its simplest form, MPT provides a framework to construct and select portfolios based on the expected performance of the investments and the risk appetite of the investor. MPT, also commonly referred to as mean-variance analysis, introduced a whole new terminology which now has become the norm in the area of investment management (Fabozzi, Gupta, & Markowitz, 2002).

Markowitz (1952), advocated that being risk averse, investors should diversify their portfolios. He understood that the risk-return trade-off of investments could be improved by diversification and cast diversification in the framework of optimization. Markowitz was interested in the investment decision making process and he assumed that investors order their preferences according to a utility index, with utility as a convex function that takes into account investors' risk-return preferences. He also assumed that stock returns are joint normal. As a consequence, the return of any portfolio is a normal distribution, which can be characterized by two parameters: the mean and the variance. Utility functions are therefore defined on two variables –mean and variance – and the Markowitz framework for portfolio selection is commonly referred to as mean-variance analysis (Focardi & Fabozzi, 2004).

2.2.2 The Capital-Asset Pricing Model

Sharpe (1964), as cited in Wachowicz Jr & Van Horne, 2008) developed the relationship between expected return and systematic risk and the valuation of securities. Based on the behavior of risk-averse investors, there is an implied equilibrium relationship between risk and the expected return for each security. In

market equilibrium, a security is supposed to provide an expected return commensurate with its systematic risk – the risk that cannot be avoided by diversification. The greater the systematic risk of a security, the greater the return that investors will expect from it.

The capital asset pricing model (CAPM) of Sharpe (1964), as cited in Focardi et al, 2004) and Lintner (1965), as cited in Focardi et al, 2004) marks the birth of asset pricing theory. Four decades later the CAPM is still widely used in applications, such as estimating the cost of capital for firms and evaluating the performance of managed portfolios. The attraction of the CAPM is that it offers powerful and intuitively pleasing predictions about how to measure risk and the relation between expected return and risk. Unfortunately, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications. The CAPM's empirical problems may reflect theoretical failings, the results of many simplifying assumptions. But they may also be caused by difficulties in implementing valid tests of the model. For example, the CAPM says that the risk of a stock should be measured relative to a comprehensive "market portfolio" that in principle can include not just traded financial assets, but also consumer durables, real estate and human capital. Even if we take a narrow view of the model and limit its preview to traded financial assets, is it legitimate to limit further the market portfolios to common stocks (a typical choice), or should the market be expanded to include bonds, and other financial assets, perhaps around the world. In the end we argue that whether the model's problems reflect weaknesses in the theory or in its empirical implementation, the failure of the CAPM in empirical tests implies that most applications of the model

are invalid. CAPM assumes investors tradeoff between risk and return solely on the basis of the expected returns and standard deviations of prospective investments.

2.2.3 Arbitrage Pricing Theory

Arbitrage Pricing Theory (APT) derived by Stephen Ross, is an alternative to the equilibrium asset pricing model and it is based purely on arbitrage arguments. It postulates that an asset's expected return is influenced by a variety of risk factors, as opposed to just market risk as assumed by the CAPM. The APT model states that the return on a security is linearly related to H systematic risk factors. However, the APT model does not specify what the systematic risk factors are, but it is assumed that the relationship between asset returns and the risk factors is linear (Focardi et al, 2004).

The APT model has given asserts that investors want to be compensated for all the risk factors that systematically affect the return of a security. The compensation is the sum of the factors of each risk factor's systematic risk and the risk premium assigned to it by the capital market. Proponents of the APT model argue that it has several major advantages over the CAPM. First, it makes less restrictive assumptions about investor preferences toward risk and return. It simply requires that some rather unobtrusive bounds be placed on potential investor utility functions. Second, no assumptions are made about the distribution of asset returns. Finally, since the APT model does not rely on the identification of the true market portfolio, the theory is potentially testable. The model simply assumes that no arbitrage is possible. That is, using no additional funds (wealth) and without increasing risk, it is not possible for an investor to create a portfolio to increase return (Focardi et al, 2004).

The APT model provides theoretical support for an asset pricing model where there is more than one risk factor making it a multifactor risk model (Focardi et al, 2004).

2.3 Determinants of Stock Returns

Apart from risk as a determinant of stock returns other determinants include interest rate, inflation and exchange rate.

2.3.1 Interest Rate

Ozbay (2009), states that there exists a negative relationship between interest rates and stock prices due to several reasons. In an equity valuation process, at first a discount rate is determined. A chosen discount rate reflects both the time value of money and the riskiness of the stock. The risk free rate represents the time 7 value of money. A risk premium represents compensation for risk, measured relative to the risk free rate. The model describes the relationship between risk and expected return, and calculated required rate of return is applied to the pricing of risky securities. That is, it is very crucial to determine the required rate of return in the process of stock value. Because, changes in interest rates affect the theoretical value of shares via affecting the investor's required rate of return. As the government adjusts key interest rates, the risk-free rate will change. If interest rate increases, the risk-free rate will rise as well. This would result in the higher market rate. If nothing else changes, the stock's target price should drop due to the higher required rate of return. The reverse is true. If interest rates fall and everything else is held constant, the stock's target price should rise because the required rate of return has dropped. Furthermore, the required rate of return will rise if the risk premium increases. In addition, interest rates have impact on a company's operations. Any increase in the interest rates, ceteris paribus, will raise the cost of capital. Therefore, a company has to work harder to generate

higher returns in a high interest environment. Otherwise, the inflated interest expense will eat away at its profits. The lower profits, the lower cash inflows and the higher required rate of return for investors that all translate into depressed fair value of the company's stock. Moreover if interest rate costs shoot up to such a level that the company has problems paying off its debt, then its survival may be threatened. In that case, investors will demand an even higher risk premium. As a result, the fair value will fall even further. Interest rates are expected to be negatively related to market returns either through the inflationary or discount factor effect.

2.3.2 Inflation

Farsio and Fazel (2008) indentified various scenarios in which a change in inflation may cause stock prices to change, and see whether the resulting change is positive or negative. They enumerated seven such scenarios: Positive relation: all else constant, as inflation rate increases, firms' total revenue increases. However, total cost will not increase as much at least for a while since wages, the largest part of total cost, are normally based on long-term contracts in most industries. Consequently, net income will increase. This increase in net income should sustain for a few years after which contract wages will be adjusted upward according to the inflation rise. Therefore, an increase in inflation will cause an increase in firms' net income for a few years causing present values of net incomes to increase. Accordingly, the intrinsic value of stocks being the present value of future cash flows should increase. This should cause a positive causal relation from inflation to stock prices. Negative relation: all else constant, as inflation increases, nominal interest rates will also increase. The discount rate used to determine intrinsic values of stocks will therefore increase. This increase in the discount rate would reduce the present value of net income, and thus should lead to lower stock prices. Negative relation: all else constant, when inflation and thus

nominal interest rates increase, firms' borrowing costs will increase. The increase is more significant for companies with high debt ratio. The increase in cost of borrowing will reduce net income and thus stock prices. Positive relation: all else constant, if the inflation is demand pull inflation, output prices will increase more and faster than input prices. In this case, firms' total revenue and net income will increase as the result of either or both an increase in output prices and an increase in quantity of goods sold. This will cause a positive relation between inflation and stock prices. Negative relation: all else constant, if the inflation is cost-push inflation, total revenue may remain unchanged or even decline while cost of production increases. Net income and stock prices will go down in this case. Positive relation: all else constant, if the price elasticity of demand for the product the firm produces is low, a rise in inflation may cause an increase in a firm's sales and net income, and thus its stock price. Negative relation: all else constant, if the price elasticity of demand for the product the firm produces is high, a rise in inflation may cause a decline in a firm's sales and net income, and thus its stock price. Given the above possible scenarios, one would conclude that the relationship between inflation and stock prices should at times be negative and positive at other times. In the long-run, the possibility of existence of different factors which lead to the above scenarios.

2.3.3 Exchange Rate

Adjasi, Harvey and Agyapong (2008) looked at the relationship between Stock Markets and Foreign Exchange market, and determined whether movements in exchange rates have an effect on stock market in Ghana. The Exponential Generalized Autoregressive Conditional Heteroskedascity (EGARCH) model was used in establishing the relationship between exchange rate volatility and stock market

volatility. It was found that there is negative relationship between exchange rate volatility and stock market returns – a depreciation in the local currency leads to an increase in stock market returns in the long run. Where as in the short run it reduces stock market returns. Additionally, there is volatility persistence in most of the macroeconomic variables; current period's rate has an effect on forecast variance of future rate. It was also revealed that an increase (decrease) in trade deficit and expectation in future rise in trade deficit will decrease (increase) stock market volatility. In addition, the consumer price index has a strong relationship with stock market volatility. This means that an increase in consumer price will lead to a rise in stock market volatility.

2.4 Review of Empirical Studies

Pamane and Vikpossi (2014) examined the Capital Asset Pricing Model (CAPM) and test its validity for the WAEMU space stock market called BRVM (BOURSE REGIONALE DES VALEURS MOBILIERES) using monthly stock returns from 17 companies listed on the stock exchange for the period of January 2000 to December 2008. Combining Black, Jensen and Scholes with Fama and Macbeth methods of testing the CAPM, the whole period was divided into four sub-periods and stock's betas used instead of portfolio's betas due to the small size of the sample. The CAPM's prediction for the intercept is that it should equal zero and the slope should equal the excess returns on the market portfolio. The results of the study refute the above hypothesis about the slope and offer evidence against the CAPM for all the sub-period and even for the whole period. The tests conducted to examine the nonlinearity of the relationship between return and betas support the hypothesis that the expected return-beta relationship is linear.

Tah (2013) carried out a research to test the relationship between volatility and returns in two emerging markets. The work provides an insight into the stochastic behavior of monthly stock market returns for two emerging markets – the Nairobi Securities Exchange (of Kenya) and Lusaka Stock Exchange (of Zambia) for the period February 1997 to October 2012. There was a negative and significant relationship between conditional mean and variance for Lusaka Stock Exchange whereas; there is no significant relationship between returns and conditional variance for Nairobi Stock Exchange. These results suggest that Nairobi Stock Exchange investors consider some other risk measure to be more important.

Ajibola and Nwakanma (2013) did an empirical test of factor likelihood arbitrage pricing theory in Nigeria. The study employs the Principal Component Analytical (PCA) technique to derive proxies for the factor likelihood APT of Ross using monthly security returns of 53 companies listed in the Nigeria Stock Exchange over the period 1st January 2003 to 31st December 2011. The results of the PCA methodology reveal that 17 latent factors are identified in the Nigerian equity market; while the estimated results of the cross-sectional APT pricing model show that only 4 of the factors are priced. However, the evidence of systematic hypothesis is not ascertained in this study. Thus, the unsystematic risk associated with arbitrage portfolios in the market cannot be reduced/ eliminated no matter the level of diversification.

Forgha (2012) did an investigation into the volatility and stock returns efficiency in African Stock Exchange Markets. This study presented empirical evidence of the efficiency and volatility of stock returns in five stock markets in Africa namely,

Cameroon, Nigeria, South Africa, Egypt and Kenya. The markets proved to be inefficient based on Generalized Autoregressive Conditional Heteroskedasticity Mean (GARCH-M), Augmented Dekey Fuller (ADF) and the Variance Ratio tests.

Hasan, Kamil, Mustafa, and Baten (2012) studied the evidence of the relationship between risk and expected returns from the Dhaka Stock Exchange. In this study a risk-return association within the Capital Asset Pricing Model (CAPM) structure in Dhaka Stock Exchange (DSE) market was examined. The study also aims at exploring whether the CAPM is applicable in DSE. For this study monthly stock returns from 80 non-financial companies for the period of January 2005 to December 2009 we used. In order to examine the risk-return trade off in a sample of individual stocks, we apply the usual two stages regression. From the CAPM empirical analysis for individual stocks, it is observed that the intercept term is significantly different from zero and slope is not equal to the excess return on the market portfolio. But, the CAPM's prediction for the intercept is that it should equal zero and the slope should equal the excess returns on the market portfolio. So, the results of the study refute the above hypothesis and offer evidence against the CAPM. Thus, it can be concluded that CAPM is not a suitable indicator of asset prices in Bangladesh over the chosen sample period. The securities market line shows linearity which means that the CAPM linear relationship is enough to express the returns generating process. Moreover, the investors are rewarded for market risk but not for unique risk because unique risk shows insignificancy during the period.

Rasiah (2012) looks at the post-modern portfolio theory that maintains greater diversification in an investment portfolio by using the alpha and the beta coefficient to

measure investment performance. Post-Modern Portfolio Theory appreciates that investment risk should be tied to each investor's goals and the outcome of this goal did not symbolize the economics of the financial risk. Post-Modern Portfolio Theory's downside measure generated a noticeable distinction between downside and upside volatility. Rom and Ferguson (1994), as cited in Rasiah, 2012), indicated that in post-Modern Portfolio Theory, only volatility below the investor's target return incurred risk, all returns above this target produced 'ambiguity', which was nothing more than riskless chance for unexpected returns.

Bello and Adedokun (2011) analyzed the risk-return characteristics of the quoted firms in the Nigerian Stock Market. The study empirically investigated the risk-return dynamics of the Nigerian quoted firms for the period of 2000-2004. The objective of study was to establish what determined the systematic risk (beta) of firms, the magnitude of such risk (beta) associated with returns in the Nigerian Stock Market. This study employed Ordinary Least Squares (OLS) procedure to estimate the regression in order to obtain the systematic risk (beta) of each of the firm. In addition, market model was used to estimate returns of the firms. This study revealed that the sizes of risks (betas) are different in firms studied; they varied positively with the sizes of returns. In addition, 65% of the firms' risk (beta) is statistically significant at 1% and 5% level and most of the firms' risks (betas) are less than Unity, which imply lower risk as compared to Market Portfolio. More importantly, most of firms' betas were positive; suggesting limited scope for diversification in the Nigerian Stock Market. The outcome of this study conformed to similar studies in the emerging stock markets.

Okpara and Nwezeaku (2009) examined the evidence of idiosyncratic risk and the cross-section of stock returns from Nigeria. In the investigation into whether idiosyncratic risks can be priced in the Nigerian stock market, two-step estimation procedures were employed, namely the time series procedure to determine the beta and idiosyncratic risk for each of the companies and the cross-sectional estimation procedure used on EGARCH model to investigate the impact of these risks on the stock market returns. The results revealed that systematic risk is priced while the idiosyncratic risk is not priced. Thus, investors in the Nigerian stock market seem to fully diversify away firms specific risk while holding market portfolio. The study also found that volatility clustering is not quite persistent but there exists asymmetric effect in the stock market. That is, unexpected drop in price (bad news) increases predictable volatility more than unexpected increase in price (good news) of similar magnitude.

López, Marhuenda, and Nieto (2009) examined the relationship between risk and expected returns with incomplete information. They started with the premise that asset pricing theory generally assumes perfect markets and, therefore, asset pricing models disregard the possibility of information deficiency in stock price formation. This study analyses if the quantity of information about an asset determines its return. More precisely, they wanted to know if there was a systematic source of information related to risk that makes assets which are highly sensitive to this risk factor present higher mean return. The results indicate that the market prices the disinformation risk. It was found that models which incorporate this attention factor perform better than the traditional CAPM or the Fama and French model, both in time-series analyses and cross-sectionally.

Capdevila (2009) researched on the relationship between risk and expected return in the Spanish stock market. The existing empirical literature fails to agree on the nature of the intertemporal relationship between risk and return. The paper focused on the study of the intertemporal relationship between the expected excess return and the risk of the aggregate stock market return by estimating a model based on Merton's ICAPM and Campbell and Shiller's log linearization, that identifies the main components of excess return, not just risk. A positive and statistically significant coefficient of relative risk aversion is found. Furthermore expected returns are not driven primarily by changes in stock market volatility but by the hedge component whose omission can cause a negative bias. This paper also analyzes the use of different proxies to model the risk component of returns. The results show that to estimate monthly volatility a GARCH model estimated with daily information can improve significantly the results of a monthly GARCH.

León, Nave, and Rubio (2005) used MIDAS (Mixed Data Sampling) to study the risk-expected return trade-off in several European stock indices. It was reported that in most indices, there was a significant and positive relationship between risk and expected return. This strongly contrasts with the result obtained when both symmetric and asymmetric GARCH models for conditional variance were employed. It was also found that asymmetric specifications of the variance process within the MIDAS framework improve the relationship between risk and expected return. Finally, bivariate MIDAS was introduced and found some evidence of significant pricing of the hedging component for the intertemporal risk-return trade-off.

2.5 Summary of Literature Review

Literature review shows that there exists a positive relationship between risk and return as stipulated by the Portfolio Theory, the Capital Asset Pricing Model and the Arbitration Pricing Theory.

However empirical review is not very conclusive and in some cases there is evidence that it does not always follow that companies with high risk are those with high returns while in other cases there is the existence of a positive, albeit statistically insignificant, relationship between systematic risk and returns. The proposed study aims to provide empirical evidence on the relationship between risk and return by testing its existence and its nature on stocks listed at the Nairobi Securities Exchange.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter explained the methodology that was used in the entire study. It looked at the research design, study population, sampling design, sampling procedures, data collection and data analysis and reporting.

3.2 Research Design

Descriptive research which was undertaken for this research study is conducted to describe the business or market characteristics. It mainly answered who, when, where, and how kind of questions. It attempted to address who should be surveyed, what, at what time (pre- and post-type study), from where (the securities market) and how this information should be obtained (method of data collection). Descriptive researches are generally used in segmenting and targeting the securities market. They are mainly conducted to describe the characteristics of some relevant groups for the research, to understand the demographic and other characteristics of the population, to understand the investor perception about any stocks and to understand the degree of association between risk and return. It was conducted on the basis of some previous understanding of the research problem and did not completely explore the research phenomenon. Specific hypotheses were formulated before conducting the descriptive research. The structural nature of this research provided it with a clear direction of information collection. Hence, information obtained from this research is not loosely structured. It involved a clear definition of the problem, formulation of specific hypothesis, and collection of structured, detailed, and relevant data (Bajpai, 2011).

3.3 Study Population

The study population consisted of all the companies listed on the Nairobi Securities Exchange. An appropriate sample was obtained for the period spanning from 1st January 2009 to 6th June 2014. The five and a half year period was deemed appropriate as it included a substantial amount of data.

3.4 Sampling Design

The sample of data used for this particular research was the weekly trading of all the companies listed on the Nairobi Securities Exchange that made up the 20 Share Index. The data that was used was for the period 1st January 2009 to 6th June 2014. These dates were chosen because on the 9th of June 2014, the companies that make up the 20 Share Index were modified.

3.5 Data Collection

The study used weekly secondary data obtained from the Nairobi Securities Exchange. All stock returns used for the study were adjusted for dividends.

3.6 Data Analysis and Reporting

Regression analysis was the statistical technique that was be used for investigating and modeling the relationship between risk and return. Return the dependent variable was represented by *y* while risk or Beta, the independent variable was represented by *x.* The equation of a straight line relating these two variables was as follows:

$$y = \beta_o + \beta_1 x$$

Where β_o is the intercept and β_1 is the slope

Source: (Montgomery, Peck and Vining, 2012)

The actual rate of return and betas of corresponding stocks' returns were calculated using Ms Excel 2007 spreadsheet program. Actual stock returns were calculated as follows;

$$\frac{Pt - Pt\text{-}1}{Pt\text{-}1} + \frac{D}{Pt}$$

Where:

Pt

Is the price of a stock at time t (week)

Pt-1

Is the price of a stock at time t-1 (previous week)

D is dividends

D/Pt is the dividend yield

The same formula was applied to the NSE 20 Share Index to calculate the market return as follows;

$$\frac{Nt - Nt\text{-}1}{Nt\text{-}1}$$

Where:

Nt is the closing index value at time t (week)

Nt-1

Is the closing index value at time t-1 (previous week)

Using the selected sample, that is, the NSE 20 Share Index, beta (β) was calculated using the CAPM formula.

Kamau (2014) carried out a research on the applicability of the capital asset pricing model (CAPM) on stocks listed in the Nairobi securities exchange and found in the research that the CAPM is applicable at the Nairobi Securities Exchange and it is therefore recommended as a stock valuation model for stocks listed in the NSE.

Guerard (2010) explained that investors are only compensated for bearing market risk, or systematic risk, as measured by a stock's beta. Investors are not compensated for bearing stock-specific risk, which can be diversified away by holding a number of stocks and thus having a portfolio. A stock's beta is the slope of the stock's return regressed against the market's return. This study only endeavored to calculate the stock's beta since it is only systematic risk that is rewarded and tested its relationship with the return of the same stocks.

Singh (2011) explained that the CAPM is a model for pricing an individual security or portfolio. For individual securities, use is made of the security market line (SML) and its relation to stock return and systematic risk (beta) to show how the market must price individual securities in relation to their security risk class. The SML enables us to calculate the reward-to-risk ratio for any security in relation to that of the overall market. Therefore, when the expected rate of return for any security is deflated by its beta coefficient, the reward-to-risk ratio for any individual security in the market is equal to the market reward-to-risk ratio.

The formula to calculate Beta was as follows:

β = Covariance (r_s, r_m)/Variance (r_m) where

r_s is the return on the individual stock

The return of the individual stock was obtained by subtracting the present week stock price from the previous week's stock price and dividing this with the present week stock price and adding the dividend yield to obtain the percentage of the return.

r_m - Return on the Nairobi Securities Exchange market index

The return of the Nairobi Securities Exchange market index was obtained by subtracting the present week market index from the previous week's market index and dividing this with the present week's market index to obtain the percentage return.

Statistical Analyis

Data was prepared using Microsoft Excel 2007 and then the software SPSS Statistics 22 was used for statistical analysis. Systematic risk or Beta was calculated using Microsoft Excel 2007. PALLANT (2005) explains that with SPSS Statistics, prediction for numerical outcomes through linear regression can be achieved. In this case, the return was obtained for a particular measure of risk. SPSS was also be used to obtain the market rate of return by measuring the arithmetic mean of the historical returns on the Nairobi Securities Exchange.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the quantitative analysis of secondary data obtained on 20 companies listed at the NSE for the period 1st January 2009 to 6th June 2014. Data in form of weekly summaries that contains the weekly stock prices, NSE 20 Share Index were collected from NSE offices. The data was compiled and analyzed using Microsoft Excel 2007 and SPSS version 22.

4.2 Data Presentation

All the secondary weekly data obtained from the Nairobi Securities Exchange was compiled from the weekly summaries into the appropriate format of weekly stock returns, weekly market returns, the percentage weekly dividend yield, percentage weekly stock returns, percentage actual stock returns and percentage weekly market returns. This was done for all the 282 weeks that span the period 1st January 2009 to 6th June 2014 and for each company that makes the NSE 20 Share Index. This was done using Microsoft Excel 2007 owing to its ease of use. After the compiling the data, the percentage weekly stock return and stock Betas for each stock was calculated.

4.2. 1 Stock Returns

This is the percentage actual stock return obtained by adding the average individual stock return and the dividend yield. The average individual stock return was obtained

by subtracting the present week stock price from the previous week's stock price and dividing this with the present week stock price. This was calculated for all 20 companies that made up the NSE 20 Share Index for the 282 weeks period.

Some of the 20 companies had zero (0) results in that; Sasini Ltd had a dividend yield of zero (0) for the first one year of the period of study while Kakuzi Ltd had a dividend yield of zero (0) for the first three months of the period of study. Kenya Airways Ltd on its part had a dividend yield of zero (0) for the last one year of the period of study while Uchumi Supermarkets Ltd had a percentage weekly stock return and a percentage actual stock return of zero (0) for two and half years of the period under study while its percentage dividend yield was zero (0) for three years and nine months of the period under study. Mumias Ltd on the other had a dividend yield of zero (0) for the last nine months of the period under study. Kenol Kobil Ltd also had a dividend yield of zero (0) for one year of the period under study. Lastly KPLC Ltd had a dividend yield of zero (0) for eight months of the period under study.

The average return was obtained by adding all the returns for the period under study and dividing the total by 282 weeks to obtain an average individual stock return. All stocks had positive average individual returns ranging from 0.53 to 9.58.

4.2.2 Market Return

This is the return of the Nairobi Securities Exchange 20 Share market index. It was obtained by subtracting the present week market index from the previous week's market index and dividing this with the present week's market index to obtain the percentage return. The market return has both negative and positive numbers and they

range from -0.078 to 0.089. Market return indicates the performance of the entire market. 60 % of the market returns are negative which shows that it underperformed 60% of the period under study while 40 % of the period, the market over performed.

4.2. 3 Stock Betas

The Beta values of the individual stocks were estimated using CAPM equation. These were calculated using Microsoft Excel 2007. It is a measure of the risk of each individual stock of the companies that make up the NSE 20 Share Index relative to the risk of the entire market. A table containing stocks, betas and average returns are included in Appendix II. The results in appendix show negative and positive betas ranging from -85.60 to 80.17. 14 stocks have negative beta and 6 stocks have positive beta. 3 stocks have an absolute beta score below 1.0 while 17 stocks have an absolute beta above 1.0.

4.2.4 Correlation coefficient

A correlation coefficient measures the strength and direction of a linear association between two variables. It ranges from -1 to +1. The closer the absolute value is to 1, the stronger the relationship. A correlation of zero indicates that there is no linear relationship between the variables. The coefficient can be either negative or positive (Norman and Streiner, 2008). Table 4.1 below shows that there is a -0.166 correlation between risk (Beta) and return. R is -0.166. Correlation thus quantifies the extent to which the two quantitative variables, risk (Beta) and return, “go together”. When high values of Beta are associated with high values of returns, a positive correlation exists. When high values of Beta are associated with low values of return, a negative

correlation exists (Norman et al, 2008). There is thus a negative correlation between the Beta and stocks at the Nairobi Securities Exchange for the period under study.

Table 4.1: Correlations

		Return	Beta
Pearson Correlation	Return	1.000	-.166
	Beta	-.166	1.000
Sig. (1-tailed)	Return	.	.241
	Beta	.241	.
N	Return	20	20
	Beta	20	20

Source: Research findings

At a significance level of 0.241 at 95% confidence level, the correlation value is statistically significant.

Table 4.2 below shows the coefficients of the relationship between risk and return. Constant is the *y* intercept. That is the value of return when risk or Beta is zero.

Table 4.2: Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B	
1	B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound
(Constant)	4.533	.531		8.541	.000	3.418	5.648
Beta	-.014	.019	-.166	-.716	.483	-.054	.027

a. Dependent Variable: Return

Source: Research findings

The Unstandardized Coefficients (B) are the regression coefficients. This gives a regression equation of return = 4.533 + -0.014*Beta (risk). The Standard Errors are the standard errors of the regression coefficients. They can be used for hypothesis testing and for constructing confidence intervals. The Standard Error for the return coefficient is 0.019. A 95% confidence interval for the regression coefficient for return is constructed as (-0.014±k*0.019), where k is the appropriate percentile of the t distribution with degrees of freedom equal to the error DF from the ANOVA table (Dallal, 2000). The degree of freedom from the Analysis of Variance shown below in Table 4.3 is 19.

The Standard coefficients (Beta) are what the regression coefficients would be if the model were fitted to standardized data, that is, if from each observation we subtracted the sample mean and then divided by the sample Standard Deviation. The t statistic tests the hypothesis that a population regression coefficient β is 0. It is the ratio of the sample regression coefficient B to its standard error. Sig. labels the two-sided P values or observed significance levels for the t statistics. The degrees of freedom used to calculate the P values are given by the Error DF from the ANOVA table. The P value for the independent variable tells us whether the independent variable has statistically significant predictive capability. In theory, the P value for the constant could be used to determine whether the constant could be removed from the model (Dallal, 2000). P value for the relationship between risk and return is 0.483.

Table 4.3: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.831	1	2.831	.513	.483[b]
	Residual	99.293	18	5.516		
	Total	102.123	19			

a. Dependent Variable: Return

b. Predictors: (Constant), Beta

Source: Research findings

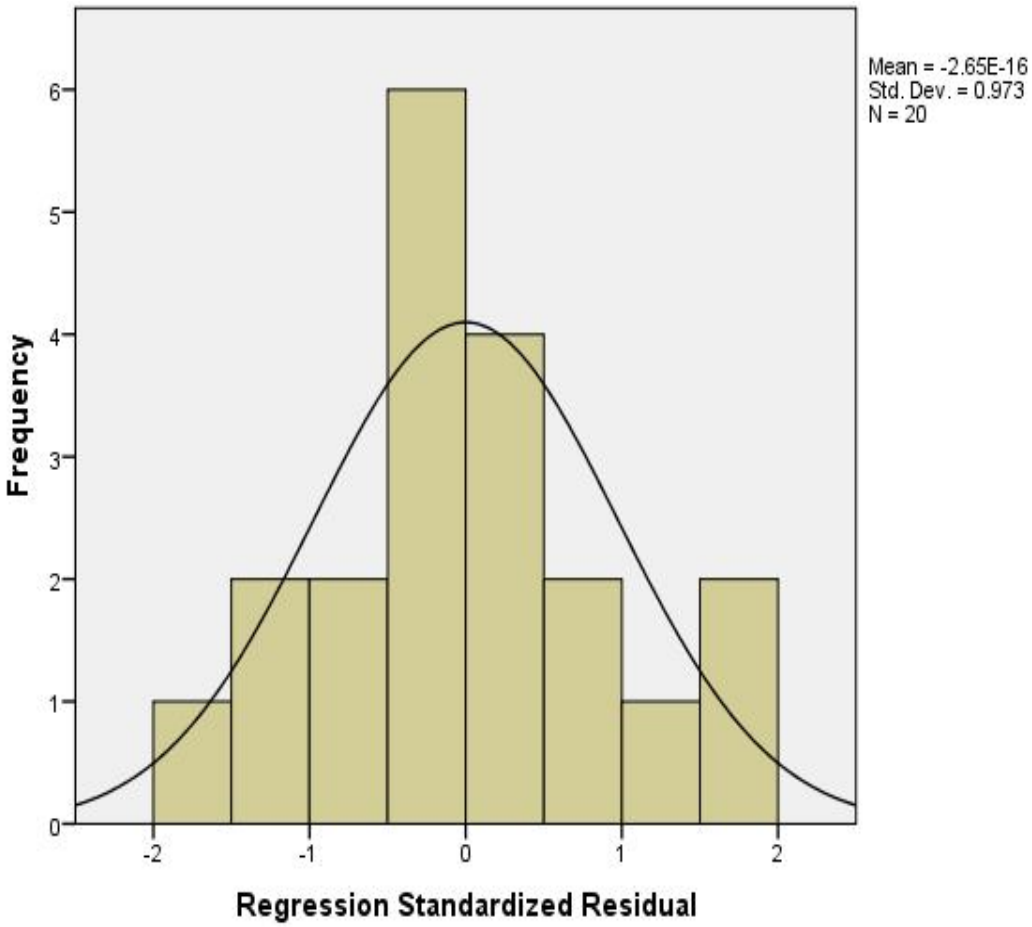
Table 4.3 above shows the Analysis of Variance values. The column labeled Sum of Squares describes the variability in the dependent variable, return. Each sum of squares has a corresponding degrees of freedom (DF) associated with it. Total df is n-1, one less than the number of independent variables in the model. For simple linear regression, the Regression df is 1. The Error df is the difference between the Total df and the Regression df. For simple linear regression, the residual df is n-2. The Mean Squares are the Sums of Squares divided by the corresponding degrees of freedom (Dallal, 2000).

Figure 4.1 below shows that the data is distributed normally. This means that the mean and variance are not dependent on each other. That is if we increase the mean of a normal distribution, its variance should remain the same (Norman et al, 2008). The errors of the data to test the relationship between risk and return are normally

distributed, independent and identically normally distributed with mean 0 and variance σ^2 (Faraway, 2002).

Figure 4.1: Histogram

Dependent Variable: Return

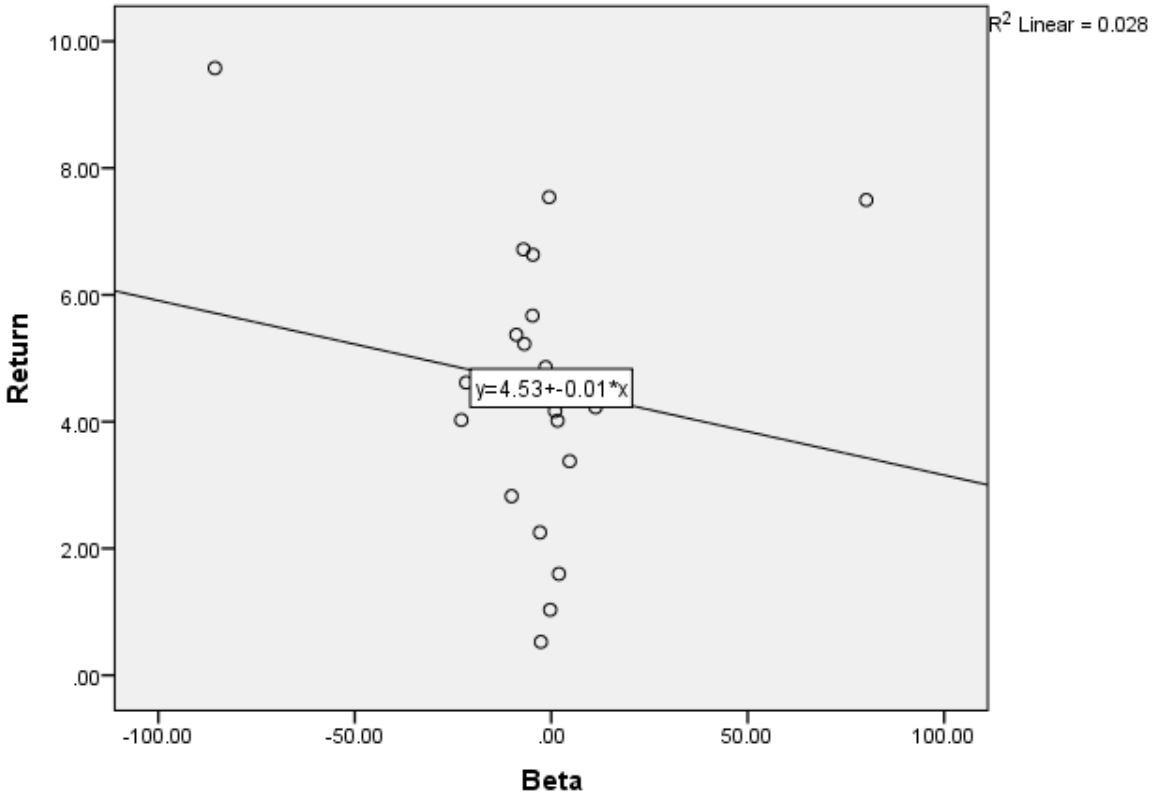


Source: Research findings

Figure 4.2 below shows a "scatterplot" of the relationship between risk and return. The scatter plot demonstrates a general idea of the relationship between risk and return. If the dots on the scatterplot tend to go from the lower left to the upper right it means that as one variable goes up the other variable tends to go up also. This is a called a "positive relationship". On the other hand, if the dots on the scatterplot tend

to go from the upper left corner to the lower right corner of the scatterplot, it means that as values on one variable go up values on the other variable go down. This is called a “negative relationship”. While using a scatterplot is an appropriate way to get a general idea about whether or not two variables are related, there are problems with this approach. These include, a scatterplot does not really tell you exactly how strong any given relationship may be and if a relationship is weak, it may not even be possible to tell from looking at a scatterplot whether or not it exists (Higgins, 2005).

Figure 4.2: Relationship between Risk and Return of Stocks Listed at the Nairobi Securities Exchange



Source: Research findings

4.3 Interpretation of the Findings

From the research findings, 7 of the 20 companies had zero (0) results either in percentage dividend yield, percentage weekly stock return or percentage actual stock for some period during the study duration; Sasini Ltd, Kakuzi Ltd, Kenya Airways Ltd, Uchumi Supermarkets Ltd, Mumias Ltd, Kenol Kobil Ltd and KPLC Ltd. The rest of the companies or thirteen (13) of them, had results that were consistently non-zero for the period under study.

From the findings, it is observed that the average returns are positive values while the Beta has both negative and positive. Negative betas are for stocks that tend to go down when the market goes up and vice versa. This study shows that 14 stocks went down when the market went up while 6 stocks went up when the market went up. One of the stocks with negative beta did not change with market changes. This is Uchumi Supermarkets Ltd which had been suspended from trading for half the period under study. The stock prices remained constant for half the research period standing at Kes 14.50.

Stocks with beta scores below 1.0 are considered less sensitive to market changes while those with beta scores above 1.0 are considered aggressive meaning they are more sensitive to market fluctuations. From the research findings, 14 stocks were less sensitive to market fluctuations while 6 stocks were more sensitive to market fluctuations.

From the research findings, all stocks have positive average return. Positive return is seen as over performance while negative returns as under performance. Therefore managers of the 20 listed firms that make up the NSE 20 Share Index, with positive average returns could be termed to have over performed.

The market returns were negative 60% of the period under study. This shows that the market underperformed 60% of the time under study. Thus investors were only able to make money in 40% of the period under study when the market over performed. This is risky for any investor since this is a five and a half period of trading.

For this study the significance level was 95%. There is a weak correlation of -0.166 between risk and return at a significance value of 0.483. R squared is 0.028, which is approximately 3%. This means that less than 3 % of the variability in return can be explained by changes in the risk or the Beta. Thus the relationship between these two variables is very weak apart from being negative. From these research findings, there is statistically significant negative relationship between risk and return for stocks listed at the Nairobi Securities Exchange.

Ndegwa (2001) carried out a research to determine whether companies with high return exhibit high risk. She found out that it is not always the case that companies with high risk are those with high returns. Only a small number of companies with high risk are compensated with a high return. This was brought out by comparing the ranking of the variance of earnings against the ranking of weighted return, capital gain and non-weighted return.

Gitari (1990), conducted an empirical investigation in to the risk return relationship among Kenyan publicly quoted companies and found out that there exists a positive (albeit statistically insignificant) relationship between systematic risk and returns. Ndung'u (2004) studied the Systematic risk and Un-Systematic risk on financial firms quoted on the Nairobi Stock Exchange and found out that high beta values seem to have a high value of the correlation coefficient between the individual stock and the market index. A positive Beta value indicates that a change in the Market Return results to a change in the same direction of the asset return. If we take the Market beta to be equal to 1, then an asset, with beta value of 1.3 will increase by a factor of 1.3 for every increase in the market return. A decrease in the Market Return would also indicate a decrease in the asset return by the same factor, making it a high risk asset to hold.

Ndiang'ui (2011) studied the relationship between dividend growth and risk for companies listed at the Nairobi Securities Exchange. This study established that there is a weak negative relationship between risk and annual dividend growth as a majority of the companies analyzed recorded a negative coefficient of .the independent variable. This meant that when firms increase their dividend the prices of their shares not only increase but also stabilize. The stability reduces risk. On the contrary when firms reduce the rates at which their dividends grow (in effect sometimes reducing the dividend), the result is increased volatility in the market of its stocks. Within this context of there not being a linear relationship between risk and annual dividend growth evidence suggested that companies paying high levels of dividend annually had lower levels of risk while those that had low levels of dividend showed comparatively higher levels of risk.

CHAPTER FIVE:SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This study has been established to study the relationship between risk and return of stocks listed at the Nairobi Securities Exchange. It uses weekly data of the companies that made up the 20 Share Index during the period 1st January 2009 to 6th June 2014. These companies are considered as the most traded at the Nairobi Securities Exchange during this period.

5.2 Summary

This research sought to establish the relationship between risk and return of stocks listed at the Nairobi securities exchange. The study focused on the twenty companies that make up the Nairobi Securities Exchange 20 Share Index. Descriptive statistical design method was used to analyze data using Statistical Package for Social Sciences (SPSS) and spreadsheets while regression analysis was also used to analyze the data.

From the research findings, 70% (14) of stocks listed in the NSE have negative betas hence negative relationship with market performance, 30% (6) of listed stocks have positive beta hence positive relationship with market performance. 15% (3) stocks have beta scores below 1.0 meaning they are less sensitive to market fluctuations; while the remaining 85% (17) stocks with beta scores greater than 1.0 are more sensitive to market fluctuations.

From the research findings, all the companies had positive average return. This shows that investors get returns from their investment. The results of the statistical analysis though show a negative relationship between risk and return which shows that by investing in companies with high Betas at the Nairobi Securities Exchange; they are likely to lose money. This goes against the fundamentals of finance.

5.3 Conclusion

The research findings revealed the existence of a weak negative relationship between risk and return for the period under study and as such the market does not follow the fundamentals of finance that the higher the risk, the higher the return.

NSE is considered a more liquid and active market than those of its East African counterparts (Uganda and Tanzania) and in sub-Saharan Africa in general. However, by international standards, it is small, illiquid and volatile with regard to price and returns. The NSE is a highly concentrated market with most of its activity centered on a few listed companies. Out of the more than 60 equities listed in NSE, about 15 companies are regularly traded. Trading on securities from the remaining companies is haphazard and irregular. The low turnover ratio, which is less than 5%, may be attributed to the limited floatation of shares as only about 35% of market capitalization is available for trading. In addition, there is a high incidence of “buy and hold” particularly among institutional investors.

Capital markets can ensure the efficient and sustainable funding of governments, corporations and banks for large-scale or long-term projects. In this regard, developing countries are working towards reforming and deepening financial systems,

through the expansion of capital markets in order to improve their ability to mobilize resources and efficiently allocate them to the most productive sectors of the economy. There is need to ensure that legal, technical and operational structures are in place so that the NSE market functions like their counterparts in more developed countries.

5.4 Recommendations for Policy and Practice

From the findings of this study, it is observed that the higher the risk the lower the return of stocks. These findings go against the fundamentals of finance that the higher the risk the higher the return. They show an underdeveloped market where the fundamentals of finance do not hold. A lot needs to be done to develop the Nairobi Securities Exchange as a market. It needs to get bigger in size and it should also offer more products.

NSE needs to increasingly play an educational role and carry out vigorous campaigns to market itself as well as educate prospective investors about the opportunities available in the market and how to effectively make use of them. The efforts by NSE and CMA to improve public awareness of the opportunities available in the capital markets in Kenya need to be supported by using a variety of means of communication such as media campaigns through the radio, television and newspapers, engaging in personal meetings with eligible firms and potential investors, and distributing reading materials to firms and prospective investors across the country.

The NSE and CMA should build a list of potential issuers of both shares and debt and educate them so as to improve their awareness of the benefits and relevance of capital markets for their operations. In addition the two institutions should set up offices at

the county levels to facilitate outreach to the public. Investor education may also be done through incorporating information on investment and the capital markets in the school and college syllabus to enhance the awareness by the younger people of Kenyans who make up a sizable proportion of the total population.

5.5 Limitations of the Study

There were various research difficulties experienced during the study. This study considered only quantitative data. Qualitative factors have a bearing on stock returns whether directly or indirectly. Behavioral finance which cannot be ignored in finance purports that behavioral influences such as emotions, herd instincts and overreaction affect the market price in comparison to the intrinsic value. One stock which had been suspended from trading for a big part of the period of study had constant returns for this period. This is Uchumi Supermarkets Ltd which had a price of 14.5 for two and a half years from January 2009 to May 2011. There are no returns during this period due to changes in stock prices.

Other companies such as Sasini Ltd, Kakuzi Ltd, Kenya Airways Ltd, Mumias Ltd, Kenol Kobil Ltd and KPLC Ltd had periods during the duration of study during which the tradings were zero (0). This affected the outcome of the calculation of risk and return and did not give an objective result. The weekly results obtained from the Nairobi Securities Exchange also had errors. This can be deduced by the fact that in the weekly summaries, the stock price was an average of two days stock price in the week. However, during some weeks, only one days' stock price was listed.

5.6 Suggestions for Further Research

First, this study used secondary data from the Nairobi Securities Exchange. It should be carried out using primary data obtained from the listed companies with the objective to obtain real results.

Second, this study should be carried out for a longer period of time and on the companies that compose the Nairobi Securities Exchange All Share Index. It should also be carried out on more recent data as well as on companies not listed in the NSE.

Thirdly, other factors affecting stock returns other than risk should also be considered. These factors include interest rates, exchange rates and inflation. Behavioral finance influence studies on stock returns should also carried out.

Last, a similar research should also be carried to study the relationship between total risk and/or unsystematic risk and the returns of stocks listed in the Nairobi Securities Exchange.

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APPENDICES

APPENDIX I

Nairobi Securities Exchange 20 Share Index

The companies that made the 20 Share Index as at the 6th of June 2014 are:

1. Sasini Limited
2. Kakuzi Limited
3. Kenya Airways Limited
4. Nation Media Group
5. Scangroup Limited
6. Uchumi Supermarkets Limited
7. Kenya Commercial Bank Limited
8. The Cooperative Bank of Kenya Limited
9. Standard Chatered Bank Limited
10. Barclays Bank Limited
11. Equity Bank Limited
12. East African Breweries Limited
13. British American Tobacco Kenya Limited
14. Athi River Mining Limited
15. Bamburi Cement Limited
16. Mumias Sugar Limited
17. Kenol Kobil Limited
18. Kenya Power Limited
19. Kenya Electricity Generating Company Limited
20. Safaricom Limited

Source: Mwai-Ireri, 2014

APPENDIX II

A LIST OF COMPANIES BETAS AND AVERAGE RETURNS

		Average Return	Beta
1	Sasini Ltd Ord 1.00	4.62	-21.67
2	Kakuzi Ltd Ord.5.00	4.03	-22.89
3	Kenya Airways Ltd Ord 5.00	3.38	4.67
4	Nation Media Group Ltd Ord. 2.50	4.23	11.28
5	Scangroup Ltd Ord 1.00	1.60	1.94
6	Uchumi Supermarket Ltd Ord 5.00	0.53	-2.65
7	Kenya Commercial Bank Ltd Ord 1.00	5.37	-8.88
8	The Co-operative Bank of Kenya Ltd Ord 1.00	2.25	-2.88
9	Standard Chartered Bank Kenya Ltd Ord 5.00	5.67	-4.76
10	Barclays Bank of Kenya Ltd Ord 0.50	6.72	-7.08
11	Equity Bank Ltd Ord 0.50	7.50	80.17
12	East African Breweries Ltd Ord 2.00	4.17	0.97

13	British American Tobacco Kenya Ltd Ord 10.00	7.54	-0.56
14	Mumias Sugar Co. Ltd Ord 2.00	6.63	-4.68
15	Safaricom Ltd Ord 0.05	4.02	1.59
16	ARM Cement Ltd Ord 1.00	1.03	-0.28
17	Bamburi Cement Ltd Ord 5.00	5.23	-6.85
18	KenolKobil Ltd Ord 0.05	9.58	-85.60
19	Kenya Power & Lighting Co Ltd Ord 2.50	2.83	-10.10
20	KenGen Co. Ltd Ord. 2.50	4.86	-1.42

Source: Research findings