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# An Analysis of the relationship between systematic risk and stakeholder's return: a case of companies listed on Nairobi Securities Exchange

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**AN ANALYSIS OF THE RELATIONSHIP BETWEEN SYSTEMATIC RISK AND  
SHAREHOLDERS' RETURN: A CASE OF COMPANIES LISTED ON NAIROBI  
SECURITIES EXCHANGE**

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**MBA/50104/14**

A Dissertation submitted in partial fulfilment of the requirements for the award of  
Degree of Master's in Business Administration

**STRATHMORE BUSINESS SCHOOL**

**NAIROBI, KENYA**

**JANUARY, 2018**

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I declare that this work has not been previously submitted and approved of a degree by this or any other university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself:

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January 2018.

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## ABSTRACT

This study sought to analyse the relationship between systematic risk and shareholders' return with specific reference to companies listed on the NSE. The study focused on the following questions: what is the firms' specific systematic risk levels and their effect on shareholders' bonuses among the companies listed on the NSE??; what is the relationship between stock category (i.e. agriculture, manufacturing, insurance, banking, commercial services, investment, energy & petroleum sector) and systematic risk among the companies listed on the NSE?; and what is the firms' specific systematic risk levels and their effect on shareholders' dividends. This study focused on two major theories: Capital Asset Pricing Model (CAPM); and Modern Portfolio Theory. The study used secondary data from the published audit reports of the companies listed on NSE. The sample size was pegged on the NSE 20 share index which is a selection of 20 stocks that represent all categories in the market. Findings revealed that systematic risk and stock returns are statistically positive and have significant relationship. Further findings showed that companies that had the highest returns to shareholders posted higher risks compared to the companies which did not pay dividends and bonuses and thus had lower risk and low returns to shareholders. The study recommends investors to look at the risk portfolio as a whole based on the variance of the returns. As per the study findings, there is a need to differentiate between systemic and unsystematic to ensure that when considering the components to consider for compensation companies do not have variables that do not apply and or cannot be measured thereby halting the process. This study is significant as it adds substantial knowledge to the existing framework of the concept of systematic risk and return. Academicians can also use the findings of this study as a basis of reference for any future study.

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## **List of Abbreviations**

BRVM	Bourse Regionale des Valeurs Mobilieres
CAPM	Capital Asset Pricing Model
CBK	Central Bank of Kenya
CMA	Capital markets authority
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IFC	International Finance Corporation
IMF	International Monetary Fund
MPT	Modern Portfolio Theory
MPT	Modern Portfolio Theory
NSE	Nairobi Securities Exchange
NSE	Nairobi Security Exchange
NYSE	New York Stock Exchange
ROE	Return on equity
UK	United Kingdom
USA	United States of America

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## **Chapter one: Introduction**

### **1.1 Introduction**

This study analyzed the relationship between systematic risk and shareholders' return with specific reference to Nairobi Securities Exchange. This chapter presents the background to the research problem; definition of systematic risk; and highlights the level of risk of companies listed with NSE. The chapter also discussed shareholders' returns and presents the study problem; specific research objectives; the scope of the study; and the justification significance of the study.

### **1.2 Background of the Study**

Systematic risk also known as market risk is the uncertainty inherent to the entire market or entire market segment. It consists of day to day fluctuations in a stock's price (Markowitz, 2014). The fact that investors replace their money with one or more shares of the stock hoping that the future returns is high, it seems essential to consider another factor such as risk besides return. Shareholders return is the money one stand to make on the investment. The money could be inform of bonuses or dividends (Basu, 2012). According to Morgan (2013) shareholder return is the profit generated by a combination of the change in the share price over the measurement period plus any dividends paid by the company in the interim.

Morgan (2013) posit that as a general rule to earn higher returns, a higher risk is undertaken. Investors have been seeking greater returns and abhor risk. In exchange for bearing more risk, higher returns can be earned (Fischer, 1991). One of the most important issues in the capital market is awareness of the level risk of companies, especially systemic

risk (unavoidable risk) that could affect stock returns, and can play a significant role in decision-making. It is believed that stock returns is a function of systemic risk and systemic risk represents the rate of change per shares than rate of return on the stock market (Jahan & Khani, 2015). Many investors notice that the stock market is a volatile place to invest their money. According to Salman (2012), the periodic moves can be dramatic, but it is this volatility that also generates the market returns for investors. Volatility is a measure of dispersion around the mean or average return of a security.

The relationship between risk and expected return is built on Modern Portfolio Theory and Capital Asset Pricing Model. Modern Portfolio Theory deals with the selection of portfolios that maximize returns whilst Capital Asset Pricing Model deals with the effects of investor decisions on security prices. Prior to the development of these two theories, investors would refer to risk and returns without quantifying them and therefore a selection of a portfolio is purely subjective (Fabozzi, Modigliani, & Jones, 2007).

One of the most important issues in the Capital Asset Pricing Model is awareness of the levels of risk. Specifically to those that are unavoidable and would affect stock returns and play a significant role in decision making (Mohsen Mehrara, 2014). Systematic risks causes anxiety and worry not only on individual investors but the government and international organizations as well. Through this risk, the world's financial system can collapse like a row of dominoes. There exists a widespread confusion on the causes and even definitions of systematic risks and how to control them (Schwarcz, 2004). The risk appetite in Kenya has increased tremendously as evidenced by the increased investors in the Nairobi Securities Exchange (NSE) after the 2003-2007 economic growth spurt. A report by NSE (2014) indicated that equity turnover comparatively between the first half

of 2014 and 2015 depicted a 6% increase from 201 Billion to 213 Billion. According to the report, profit before tax in the same period grew by 22% from 178 Million in 2014 to 218 Million.

The required return to a shareholder is what they would like to obtain to feel sufficiently remunerated. The investor seeks to obtain a return at minimum that has a positive return and one that exceeds the company's created value (Fernandez, November 2015). The main objective of shareholders in investing in a business is to increase their wealth. Thus the measurement of performance of the business must give an indication of how wealthier the shareholder, has become as a result of the investment over a specific time (Waithaka, 2014). Stock Exchange as the pulse of economy is defined as the formal capital market in which companies buy and sell stock or bonds. Evidence shows that countries with developed capital markets (stock) could have higher economic growth (NSE, 2013).

### **1.2.1 Nairobi Securities Exchange (NSE)**

NSE was formed in 1954 as Nairobi Stock Exchange and registered under the Societies Act. In March 2011, the Nairobi Stock Exchange changed its name to The Nairobi Security Exchange. As at the end of 2014, NSE had 64 listed companies with the market capitalization of Kshs1.682 trillion (Capital Markets Authority CMA, 2015). NSE was in 1994 listed by the International Finance Corporation (IFC) as the best performing market in the world.

NSE has indices which measure the Stock market performance namely the NSE 20 Share Index and the NSE All Share Index (CMA, 2015). The NSE 20 Share Index, the benchmark index of the NSE, is a price-weighted index. Computed NSE 20 Share Index

generally reflects the performance of the whole market currently 4834 points, reflecting an overall robust growth in stock prices and NSE. The securities exchange market helps in the transfer of savings to investment in productive ventures and help cultivate a culture of saving to local and foreign investors who are interested in investing (Mutuse, 2014). Listed firms play an important role in growth and development of the Kenyan economy by providing investors and firms with an opportunity to invest, (Kariithe, 2013).

Stock returns that investors generate in the form of profits through trading or in the form of dividends are given by the companies to its shareholders from time to time. But stock returns are not fixed ensured returns and are subject to market risks (Odongo, 2015). Stock market returns are homogeneous and may change from investor to investor depending on the amount of risk one is prepared to take and the quality of the stocks market analysis (Nzuki, 2014). The idea to is to buy cheap and sell dear, but risk is part and parcel of this market and an investor can also see negative returns in case of wrong speculations (Mutuse, 2014).

### **1.3 Statement of the problem**

In investment, risk is the possibility of losing part or all cash invested and that a return is what one makes on an investment. Low risks are associated with low potential returns while high risks are associated with high potential returns (Elsas, 2013). An investor can choose to invest in virtually risk free investments such as bonds. For a suitable additional return, the investor will invest in something more risky such as stocks. There are no guarantees and just as risk means higher potential returns, it also means higher potential losses.

Studies on systematic risk and shareholders' return have been presented in various literatures. Kolani (2010) did analysis in Guinea-Bissau on relationship between risk and expected return in the Bourse Regionale des Valeurs Mobilieres (BRVM) Stock Exchange. The study did not address the linear relation between the stock categories and systematic risk. Giva (2015) conducted a study on the relationship between risk and return for firms listed at the NSE however the study did not take into consideration the linear relationship between systematic risk and returns on the bourse. Further, Zahiri (2013) conducted a study on relationship between systematic risk and stock returns in Tehran Stock Exchange using the capital asset pricing model which makes it difficult to generalize the findings.

The specific problem is that studies in Kenya have almost exclusively focused on the relationship between risk and how it affects growth of the market in general (Borgia & Wambua, 2014). The general problem is that those studies have focused on the international markets and developed countries (Kazi, 20012). This leaves a gap in the literature focusing on a local context hence the motivation behind this study to analyze the relationship between systematic risk and shareholders' return with specific reference to companies listed on the NSE.

## **1.4 Research Objectives**

### **Main Objective**

To analyze the relationship between systematic risk and shareholders' return with specific reference to companies listed on the NSE.

### **Specific objectives**

- i. To identify firms' specific systematic risk levels and their effect on shareholders' bonuses among the companies listed on the NSE.
- ii. To identify the relationship between stock category (i.e. agriculture, manufacturing, insurance, banking, commercial services, investment, energy & petroleum sector) and systematic risk among the companies listed on the NSE.
- iii. To find out the firms' specific systematic risk levels and their effect on shareholders' dividends.

## **1.5 Research Questions**

- i. What is the firms' specific systematic risk levels and their effect on shareholders' bonuses among the companies listed on the NSE?
- ii. What is the relationship between stock category (i.e. agriculture, manufacturing, insurance, banking, commercial services, investment, energy & petroleum sector) and systematic risk among the companies listed on the NSE?
- iii. What is the firms' specific systematic risk levels and their effect on shareholders' dividends among the companies listed on the NSE?

## **1.6 Significance of the study**

### **1.6.1 Capital Markets Authority**

Findings of this study provides further knowledge on how the NSE market segmentation has been done and would aid the CMA in making future adjustments if need be.

### **1.6.2 Investors**

The study was intended to provide information for existing and potential stock investor for use while making stock investment decisions on firms to invest in. Investment advisors have a better position in recommending the NSE to both foreign and local investors.

### **1.6.3 NSE and Stock brokers**

The study provides information useful to NSE and stockbrokers in advising stock investors

### **1.6.4 Scholars**

Scholars interested in the same area of study can use the same information provided by the study.

## **1.7 Scope of the study**

The study was conducted covering the period between Years 2010 to 2015. This was chosen in order to capture the influence of factors in the economy that could have affected share prices and dividends. The five-year period was comparable to that used in previous studies (Kiprono 2004 & Ayieye 2004). It is also assumed that investors required about 5 years to assess the risk of a certain stock. A similar period was used to determine the risk return classes among New York stock exchange under similar assumption (Sharpe and Cooper, 1972). A second justification for the use of five-year period was that a much longer period would increase stochasticity of betas (Sharpe & Cooper 1972, Blume 1973, Fabozzi

& Francis 1978). The scope was limited to companies listed at NSE because of the readily available data and information from their published annual reports and accounts.

## **Chapter two: Literature review**

### **2.1 Introduction**

This chapter focused on the relationship between systematic risk and shareholders' return. The chapter discussed theoretical review which covered Capital Asset Pricing Model (CAPM) and Modern Portfolio Theory (MPT). The empirical review covered systematic risk; risk free rate; and market risk premium. The chapter also covered the conceptual framework, critique of the existing literature and research gaps herein.

### **2.2 Theoretical Literature review**

This section consists of the theories that support the concept of risk and return relationship of firms and investors. According to Markowitz (1952); Ferson (2013); and Cukur (2014) the theories are Modern Portfolio Theory and Capital Asset Pricing model.

#### **2.2.1 Capital Asset Pricing Model (CAPM)**

Capital asset pricing model was originally developed by Markowitz (1952) and developed over a decade later by others, including Sharpe (1964). The theory is relevant to this study as it describes the relationship between risk and expected return, and it serves as a model for the pricing of risky securities (Markowitz, 1952). According to Cukur (2014), the model relates the expected return of an asset to its riskiness measured by the variance of the asset's historical rate of return relative to its asset class.

Additionally, Fama (2013) argues that CAPM model decomposes a portfolio's risk into systematic and specific risk. According to Fama, Systematic risk is the risk of holding the market portfolio to the extent that any asset participates in such general market moves, while specific risk is the risk which is unique to an individual asset. Similarly, Wang (2014)

argued that the central principle of the CAPM is that, systematic risk, as measured by beta, is the only factor affecting the level of return. On the other hand, according to Jaganathan (2013), unsystematic risk represents the component of an asset's return which is uncorrelated with general market moves.

One of the most difficult problems for investors is to estimate the highest level of risk one is able to assume. Therefore by studying Capital asset pricing model, most investors at NSE are able to select securities that are consistent with their risk preferences because relationship between risk and return is important in a portfolio context since these two parameters are considered the main objects of choice. Investors are aware that expected return increases as risk increases (Cheney & Moses, 1989). Study conducted by Gitari (2013) found that Kenyan publicly quoted companies do exhibit a true relationship between systematic risk and return. This relationship however, was not statically significant thereby suggesting that investors may either be under or over compensated for taking high risk. This suggested the need for risk analysis on the part of investor (Gitari, 2013).

Capital asset pricing model is significant to this study because the model assumes that any portfolio that is mean-variance-efficient and lies on the efficient frontier which is also equal to the market portfolio. Salman (2015) averred that the implication is the relationship between risk and expected return for any efficient portfolio that must also hold for the market portfolio, if equilibrium is to be maintained in the market.

### **2.2.2 Modern Portfolio Theory**

Modern portfolio theory as known as portfolio theory was proposed by Markowitz (1952). The motivation behind using the theory in this study is because the theory attempts to maximize portfolio expected return for a given amount of portfolio risk, or equivalently

minimize risk for a given level of expected return, by carefully choosing the proportions of various assets (Markowitz, 1952). A recent study by the model Huberman (2016), supports the portfolio theory that investors choose portfolios that are mean-variance efficient, and found along the efficient frontier for portfolios.

Ferson (2013), posit that modern portfolio theory is a mathematical formulation of the concept of diversification in investing, with the aim of selecting a collection of investment assets that has collectively lower risk than individual asset. Ferson asserts that before introduction of portfolio theory, investors focused on assessing the risks and rewards of individual securities in constructing their portfolios. Standard investment advice was to identify those securities that offered the best opportunities for gain with the least risk and then construct a portfolio from them (Shanken, 2015). The portfolio theory is used in financial risk management and was a theoretical precursor for today's value-at-risk measures (Shanken, 2015). According to Sharpe (2015), portfolio theory looks at risk as a total per portfolio and not per share or component of portfolio.

In relation to this study, portfolio theory can be used by investors to identify an efficient portfolio that offers a higher expected return than the others with the same risk or lower. In this study therefore, portfolio theory enforces one of the challenges that the study sought to address. An investor tends to consider portfolios as a whole and not individual investments and their impacts separately. This can then give an individual more options in regards their decisions on investments.

### **2.3 Empirical review**

A case study conducted by Bedica (2013) evaluated the risk reduction benefits of portfolio diversification at NSE. The analysis indicated that there was significant risk reduction at the NSE as portfolio grows in size. It continued until a portfolio size of about 13 securities was held. According to the study, beyond this size, the risk reduction became insignificant (Bedica, 2013).

A cross sectional study conducted by Mudida and Ngene (2010) sought out to determine the relationship between cash flows and earnings performance measures for companies listed at NSE. Using the principles of ROE and ROA, the study investigated the impact of cash flows on the performance of the companies at the NSE. The return and risk relationship were based on the mean -variance framework of portfolio selection. According to the findings of the study, theoretical expectations are that there should be a positive risk - return relationship for the simple reason that investors need to be compensated via the provision of a risk premium if they are to take additional risk. The theoretical risk - return relationship is thus based on the premise of risk aversion. (Markowitz, 1952).

However, a comparative study done by Tang (2013) between different stocks categories in Africa discovered that within most industries, risk and return were negatively correlated. Another study by Shum (2013) discovered a negative relationship between risk and return. Various explanations have been advanced to explain this apparent contradiction.

Hodoshima (2016) did a random sampling on 10 manufacturing firms in West Africa. The results questioned the premise of risk aversion arguing that it is not universally applicable. The findings indicated that individuals are not uniformly risk averse, but adopt

a mixture of risk -seeking and risk averse behaviors. The findings further established that target or prospects are important in determining this behaviour. The study found that when returns have been below target, there is risk-seeking behaviour and when the returns have been above target, there is risk aversion behavior. These explanations for negative risk-return relationship have also received support in corporate context which established that troubled firms or firms whose returns are below prospect returns are more risk-seeking than healthy firms (International Monetary Fund IMF, 2014). It is, therefore, clear from these findings that the non-universality of risk-aversion is the most important explanation for any negative risk- return relationship (Dusak, 2012).

According to Thomas (2014) mean - variance criterion has remained the most widely used bases for portfolio selection since the portfolio theory was originally postulated by Markowitz in 1952. Alam and Uddin (2015) stated that the main objective of portfolio selection is to maximize investors' utility. According to Alam (2015), the mean-variance criterion is an appropriate measure of risk for any risk-averse investor. These are investors who will prefer more to less return for any given level of risk and less to more risk at a given level or return (Chen, 2013). According to Chen, Mean - variance criterion is attractive because it is simple to apply. This method has however been criticized by a census conducted by Pearce and Roley (2015) which established that the mean variance criterion is sufficient for dominance only when the utility function is quadratic or the probability distribution of the resultant portfolio can be fully described by two parameters that are independent of each other. The study found that it was also valid when the returns are normally distributed.

As reported in a current study conducted by Rozeff (2012), most returns tend to be log normally distributed and it is the mean variance criterion that may not, in practice provide the best basis for portfolio selection. As a result of arguments against mean variance approach in portfolio selection, other frameworks have been developed that require less restrictive conditions (Liu, 2015). Characteristic Dominance criteria comprise a set of inequalities involving functions of the probability distribution of the returns (Cooper, 2014). Culberson (2013) stated that these functions induce partial ordering of the set of probability distributions. Culberson argued that these orderings provide on admissible set of choices under restrictions on the decision makers' utility functions, that follows some prevalent and appealing models of economic behaviour. A study by Titman (2015) found that Characteristic Dominance criteria is of limited practical application compared to the mean - variance approach and also calls for complex mathematical computations. Time dominance consists of rules which provide partial orderings of temporal prospects, yielding on efficient set from which the ultimate choice will be made (Stark, 2013). According to stark, temporal prospects are decisions alternatives distributed over time and inferior alternatives are eliminated using Net Present Value (NPV) rule.

Additionally, minimax criterion was developed by Krasker (1982). His model assumed that investors select their portfolios such that the portfolios have some minimax properties like some guaranteed level of some minimum utility (Fabozzi, 2013). This criterion also gave some portfolios that were fully identical to those selected under other criteria such as mean -variance. Since portfolio selection involves utilisation of all available information, minimax behaviour seeks to protect the investor from the possibility that their

probability distribution is incorrect due to the nature of information that the investor has (Owen, 2014).

In a portfolio context, a study conducted by Ngene (2016) found that investors feel uncomfortable when they make decisions based on subjective probability distribution formed on basis of vague information. From the foregoing, the search for the best portfolio selection criteria is still going on. But so far, the mean - variance criterion remains the most widely used portfolio selection method (Carhart, 2014). As Chen (2013) points out, the effect of market conditions such as restriction on short sales will be simpler if investors are willing to accept the concept of homogenous investor behaviour. Chen stated that where short sales are not allowed, the effect will be to increase the price of risky assets consistently.

#### **2.4 Critique of the Existing Literature**

The literature review has confirmed that investors of any rank at stock markets are interested in knowing how much return their investment can earn. It has been argued that for making better investment decisions, it is imperative for shareholders to have knowledge about investment risk and return. Studies have indicated that investment return is an important element that any investor takes into consideration in making investment decisions. Similarly, the risk that is associated with a particular investment return is even more important to investors as it influences the return levels.

As per the empirical review, the mean variance approach can then be considered as correctly reflecting the best portfolios to maximize the investors' utility. Coefficient of variation of expected returns is used to de-limit the standard deviation as a measure of risk

for the simple reason that a higher standard deviation does not necessarily mean a higher risk.

Regarding the reviewed studies that focus on the effect of interest rates on stock returns, there are relatively few literatures building models to analyze the interdependence relationship between interest rates and stock returns. Granger causality test is used by Hashemzadeh and Taylor (1988) and they point out that interest rates cause the changes of stock prices in financial market while the opposite is not true.

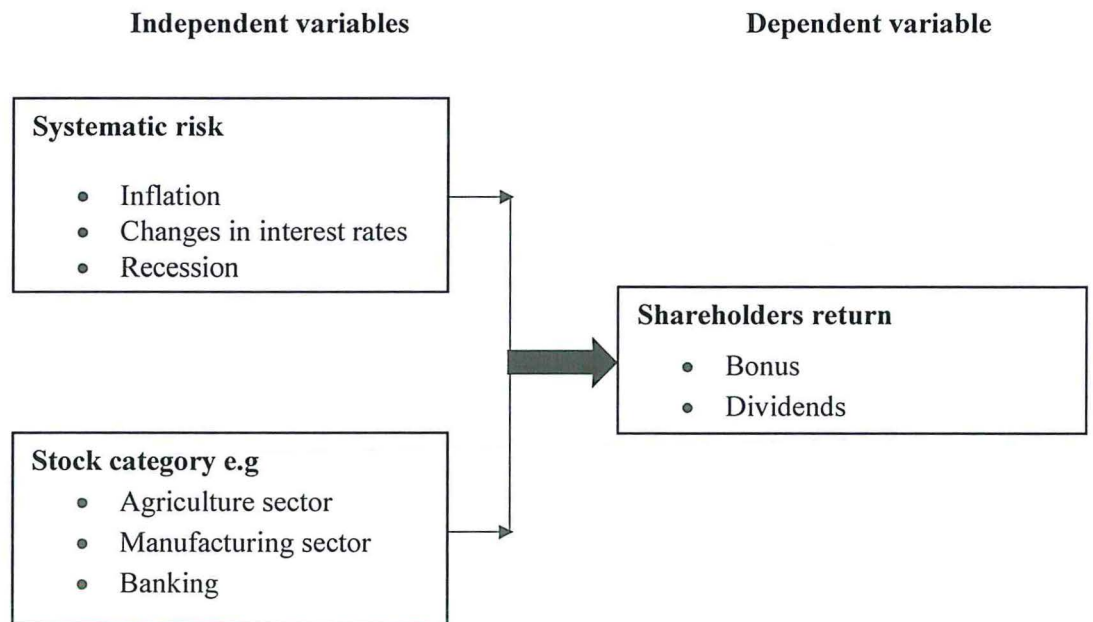
The empirical studies mentioned above have made great contributions to revealing the relationship between interest rates and stock returns. However, they measure the correlation between interest rates and stock returns without taking the issue of contemptuous interdependence between them into account. Some different models are established to solve the simultaneity problem. For example, Rigobon and Sack (2003) use an identification technique based on the heteroscedasticity of stocks. They find that short-term interest rates are affected by the stock market shocks significantly, changing in the same direction as the variation of stock returns. With the same method, Rigobon and Sack (2004) prove that stock returns decline significantly when short-term interest rates are raised.

According to the literature reviewed, Capital Asset Pricing Model (CAPM) indicates that returns are solely determined by the systematic risk. This has however been challenged and the model extended to include beta risk and size and a decreasing function of public availability about them. Studies have showed mixed results in relation to the effect of risk and return of for listed firms: Bundoo (2012) and Elsas (2013) concluded that there was a positive relationship between systematic risk and return as higher returns was

associated with higher value of beta. On the other hand, Gitari (2014) concluded that there exists statistically insignificant relationship between systematic risk and stock returns.

### 2.5 Conceptual Framework

The conceptual framework of this study was based on the relationship between systematic risk and shareholders' return. A conceptual framework is an analytical tool with several variations and contexts used to make conceptual distinctions and organise ideas (Peil 2003). All investments in assets have an element of risk. This risk is brought about by fluctuations in the returns. The returns are what is actually earned by an investor. The return of a share can be calculated as the dividend yield plus the capital gains (Pandey, 2001).



**Figure 2.3:** Conceptual framework (Jones, 2014; Fabozzi, 2012; Modigliani, 2015; Reily, 2013; Brown, 2013; Ngene, 2015; & Mudida, 2016).

## **Chapter three: Research Methodology**

### **3.1 Introduction**

This chapter discusses the methods used to undertake this study. The key sections discussed here include: research design, target population, the procedures and techniques for collecting data, and data analysis processes.

### **3.2 Research Design**

The study applied descriptive research design. This design was used in the study consistent with other similar studies (Reily & Brown, 2012). Descriptive statistics tell what is, how does (Vaclavik & Jablonsky, 2012). According to Jablonsky (2012) descriptive research can be either quantitative or qualitative. A study done by Vaclavik (2012) stated that descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection. It can involve collections of quantitative information that can be tabulated along a continuum in numerical form, such as scores on a test, hence the motivation in using descriptive design in this study which is generally an empirical research that applied quantitative approach that involved data analysis of numerical data obtained from published audit reports of the companies listed.

### **3.3 Target population and sample**

The target population of this study was the 58 companies listed on the NSE (Appendix I). The sample size was pegged on the NSE 20 share index (Table 3.1) which is a selection of 20 stocks that represent all categories in the market. The NSE 20 share index is used to track the performance of the NSE equities (shares) market. The NSE 20 Share Index is a price weight index calculated as a mean of the shares of 20 public, listed companies. They

are selected based on a weighted market performance during the period under review based the following criteria:

- i. Trading activity measures weighed in the ratio of 4:3:2:1. i.e. Market Capitalization 40%, Shares traded 30%, Deals/liquidity 20%, and turnover 10%.
- ii. A company must have a free float of at least 20%.
- iii. A company must have a minimum market capitalization of Kshs. 20 million.
- iv. A company should ideally be a blue chip with superior profitability and dividend record.

Currently the following companies make up the NSE 20 share index. The list includes the sector in which the companies are found:

**Table 3.1: Sample size**

<b>Agricultural Sector</b>	<b>Commercial and Services Sector</b>	<b>Investment Sector</b>	<b>Banking Sector</b>
Sasini Limited	Kenya Airways	Centum	Kenya Commercial Bank
	Nation Media Group		The Cooperative Bank of Kenya
	Scangroup Limited		Standard Chartered Bank Limited
			Barclays Bank Limited
			Equity Bank Limited
			CFC Stanbic Holdings Limited
<b>Manufacturing and Allied Sector</b>	<b>Construction and Allied Sector</b>	<b>Energy and Petroleum</b>	<b>Insurance Sector</b>
East African Breweries Limited	Athi River Mining Limited	KenolKobil Limited	British - American Investments Company ( Kenya) Limited
British American Tobacco Kenya Limited	Bamburi Cement Limited	Kenya Power Limited	

	Kenya Electricity generating Company Limited		
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The returns observed were at the end of every quarter of the year between 2010- 2015.

The 20 share index has been under criticism because of its focus on 20 blue chip companies and its inability to accurately represent the underlying market position.

### **3.4 Data collection**

The study used longitudinal data gathered from published audit reports of the companies listed on NSE for the period between 2010 and 2015. To ensure validity of the data, the researcher ensured that the sources were reputable and the information was not more than 5 years old.

### **3.5 Data Analysis**

The analysis entailed; inspecting, cleaning, transforming, and modeling data with the aim of discovering important information, proposing conclusions and backing up decision making (Kothari, 2004). Data was analyzed using descriptive statistics. The descriptive statistics utilized in this study included frequencies and percentages. Regression analysis was used to estimate the relationship between systematic risk and the dependent variable which was shareholders returns. Coded data was used to generate statistics such as mean scores and percentages. Capital Asset Pricing Model (CAPM) approach was applied which relates systematic risk to returns.

The CAPM equation is therefore given as:

$$R_j = R_f + (R_m - R_f)\beta_j$$

Where:

$R_j$  is the expected return on stock

$R_f$  is the risk free rate

$(R_m - R_f)$  is the market risk premium

And  $\beta$  is the securities beta which is also the measure of systematic risk is derived from:

$$\text{Cov}(R_j, R_m) / \text{Var}(R_m)$$

The CAPM helped in determining the required rate of return for a particular stock. It redefines risk in terms of security beta.

For the purpose of this research:

- 1) The  $R_f$  used was the prevailing T-bill rate advised by the Central Bank of Kenya (CBK) during the periods reviewed.

Taking into account the variables used for our study, both the time series and cross sectional specification were used.

The time series specification for the first phase was:

$$R_{jt} - R_{ft} = \alpha_j + \beta_j(R_{mt} - R_{ft}) + \varepsilon_{jt}$$

Where:

$R_{jt} - R_{ft}$  : Risk premium on the j'th stock in period t

$\alpha$ : is the alpha coefficient or the intercept

$(R_{mt} - R_{ft})$  : Market risk premium

$\beta_j$  is the systematic risk of stock j and

$\varepsilon_{jt}$  is the error term assumed to be random.

This first phase was key to run the regression between the stock return and market return in order to determine the beta coefficient for the period.

The cross sectional specification was used in the second phase of the study to test the risk-return relation hypothesis. The model is as below:

$$R_j - R_m = \gamma_{0t} + \gamma_{jt}\beta_j + \mu_j$$

Where:

$R_j$  = Weighted average return of stocks

$\beta_j$  = Estimate of the systematic risk of stock j

$\mu_j$  = Error term assumed to be random.

## **Chapter 4: Presentation of Research Findings**

### **4.1 Introduction**

The study sought to analyse the relationship between systematic risk and shareholders' returns focusing at the companies listed on NSE. The range of the longitudinal data obtained was for 5 years (2010-2015). The results of the study aimed to answer the following study questions: - what is the firms' specific systematic risk levels and their effect on shareholders' bonuses among the companies listed on the NSE?; what is the relationship between stock category (i.e. agriculture, manufacturing, insurance, banking, commercial services, investment, energy & petroleum sector) and systematic risk among the companies listed on the NSE?; and what is the firms' specific systematic risk levels and their effect on shareholders' dividends among the companies listed on the NSE?. Companies' share price gains/loss, bonuses and dividends was gathered and averaged annually. Risk was captured as beta and was extracted from investors' handbook.

Averages calculated from the data was used for the analysis. The results of regression analysis between adjusted returns, and systematic risks are shown in the sections below. The Sectors considered in the study included; Agriculture, Manufacturing and Allied Sector, Commercial and Services, Finance and Investments, Energy and Petroleum and Insurance Sector.

## 4.2 Sample representation

In this section, companies' share price gains/loss, bonuses and dividends were collected and averaged annually. Risk was captured as beta and was extracted from investors handbook.

**Table 4.1: Price gains, Dividends, Bonuses and Beta**

Sector	Dividends	Price gain	Return	Beta	Bonuses
AGRICULTURAL SECTOR					
Sasini Limited	0.20	0.31	0.51	0.56	130.00
COMMERCIAL AND SERVICES SECTOR					
Kenya Airways	0.61	0.21	0.82	0.42	
Nation Media Group	0.40	0.67	1.07	0.46	16.80
Scangroup Limited	4.10	0.45	4.55	0.88	73.00
CONSTRUCTION AND ALLIED SECTOR					
Athi River Mining Limited	0.54	0.67	1.21	0.12	272.60
Bamburi Cement Limited	1.16	0.54	1.70	0.21	148.80
Kenya Electricity generating Company Limited	0.70	0.43	1.13	0.90	3.40
MANUFACTURING AND ALLIED SECTOR					
East African Breweries Limited	0.40	0.21	0.61	0.01	107.20
British American Tobacco Kenya Limited	6.95	0.87	7.82	0.31	
INVESTMENT SECTOR					
Centum	1.16	0.56	1.72	0.31	478.00
ENERGY AND PETROLEUM					
KenolKobil Limited	1.60	0.23	1.83	0.43	58.00

Kenya Power Limited	0.56	0.89	1.45	0.45	
BANKING SECTOR					
Kenya Commercial Bank	1.34	0.67	2.01	0.56	
The Cooperative Bank of Kenya	3.20	0.97	4.17	0.71	227.20
Standard Chartered Bank Limited	0.40	0.41	0.81	0.09	12.20
Barclays Bank Limited	0.56	0.51	1.07	0.03	176.40
Equity Bank Limited	0.21	0.69	0.90	0.01	3.90
CFC Stanbic Holdings Limited	0.45	0.66	1.11	0.06	
INSURANCE SECTOR					
British - American Investments Company ( Kenya) Limited	0.41	0.78	1.19	0.76	454.00

Table 4.1 shows that companies that paid the highest dividends to shareholders included, Scangroup Limited (4.10). Cooperative Bank of Kenya (3.20), KenolKobil Limited (1.60), Bamburi Cement Limited (1.16) and Centum (1.16). This could mean that age of the companies could be a factor to the results. The results are consistent with a study conducted by Pastor and Veronesi (2003) which found that uncertainty declines overtime due to learning according to the model that predicted the market to book ratio declines over a typical firm's lifetime. Pastor and Veronesi argued that an older firm has a lesser ratio as compared to a younger firm. This was amplified by Scheinkman & Xiong (2003) and Hong (2006) who argued that age of a company as a key factor affecting returns.

The companies that registered relatively good bonuses were, Centum (478.00), British - American Investments Company (Kenya) Limited (454.00), Athi River Mining Limited (272.60), Cooperative Bank of Kenya (272.20), Barclays Bank Limited (176.40), Bamburi Cement Limited (148.80) and Sasini Limited (130.00). Centum posted the

highest bonuses followed by British - American Investments Company (Kenya) Limited. This scenario might have been caused by companies to woo new shareholders with bonuses or trying to retain investors. This means that good performance is measured by how better off the shareholder is at the end of the period than he was at the beginning. This is in line with a study conducted by Kapil and Sundar (2009) which implied that shareholder satisfaction is a key factor with a significant impact on stock returns. Any investor's main interest is to increase their wealth.

Companies that did not pay bonuses included the following, Kenya Airways, British American Tobacco Kenya Limited, Kenya Power Limited, Kenya Commercial Bank, and CFC Stanbic Holdings Limited. This means that the expected return on shareholders of the company without debt is a debt too. In terms of risk, Kenya Electricity generating Company Limited had the highest risk (0.90) followed by Scangroup Limited and British - American Investments Company (Kenya) Limited. The same companies also posted impressive returns to the shareholders. The results mean that financial leverage affect the level of systematic risk, i.e. with the increase in corporate debt, systematic risk is increased. This is supported by a study done by Fabozzi (2007) which indicated that company size (the asset) has a significant effect on the amount of risk.

The lowest risks were registered with East African Breweries Limited (0.01), Equity Bank Limited (0.01) and Barclays Bank Limited (0.03). These companies also posted the lowest returns to investors during the period. This could mean that the difference in risk levels could be as a result of the fluctuation of the price causing returns of some companies to fluctuate compared to the rest. The results are consistent with another study conducted Brown (2012) which concluded that most important factors that influence

decision making for the purchase of shares return and risk in comparison with other investment opportunities; the risk and return on investment are key.

### 4.3 Descriptive statistics

The study analyzed the movement of return on capital employed in a period of five years in relation to the movement of risks as measured by financial gearing, debt equity ratio and inflation rate.

**Table 4.2: Descriptive statistics**

	N	Minimum (%)	Maximum (%)	Mean	Std. Deviation	Variance
Firms	70	1	14	7.50	4.060	16.486
Return on capital employed	70	-8.827	7.163	1.84529	2.700352	-7.292
Gearing ratio	70	0.002	192.070	4.99581	23.499585	552.230
Inflation rate	70	5.560	14.280	8.05000	3.264009	10.654
Debt-equity ratio	70	0.398	0.398 8.487	3.52669	2.131450	4.543
Valid N	70					

Table 4.2 gives the summary statistics of the main variables that have been included in the model including: minimum, maximum, mean, standard deviation and variance. It is noted that the higher the debt ratio the higher the risk and the higher the financial gearing ratio the higher risk. The results shows that while some firms made losses, some had up to 17 times returns (profits) on the capital they employed.

### 4.3.1 Regression analysis

In this section, the researcher summarized the information per company with the aim to find out the relationship between systematic risk and shareholders returns. The researcher was following the linearity or nonlinearity of capital asset pricing model (CAPM) in NSE 20 share index.

**Table 4.3: Summary of the regression analysis**

prob.	statistic	standard deviation	coefficient	variable
0.0000	1.838856972	0.685516791	1.26056733	Return on stock
0.56	1.280032443	1.450831444	1.857111317	Beta (systematic risk)

<i>Regression Statistics</i>	
Multiple R	0.304782734
R Square	0.092892515
Adjusted R Square	0.036198297
Standard Error	1.782693455
Observations	18

The results are significant at 0.05 level of significance

According to the results in Table 4.3, the coefficient of  $BETA_i$  is significant at the 5.6% level. The results indicate that T-Statistic achieved as 1.28 is significant, meaning there is linear correlation between systematic risk and return.

Thus linearity of the relationship between systematic risk and return on stock among the top 20 companies in NSE can be accepted. Therefore according to the results it can be claimed that the linear relationship between the systematic risk and return on stock

among the top 20 companies in NSE is established. The results are in line with another study conducted by Ngene (2010) which asserted that systematic risk (market risk); Interest rates, recession and wars all represent sources of systematic risk because they affect the entire market and cannot be avoided through. Another study by Mudida (2010) indicated that this type of risk affects a broad range of securities and can be mitigated only by being hedged.

**Table 4.4: Summary of results of non-linear regression.**

prob.	statistic	standard deviation	coefficient	variable
0.0000	0.0000	0.0000	0.0000	Return on stock
0.61	*4.17582892	0.949527037	3.96506246	Beta (systematic risk)
0.000	0.000713682	1.903464253	0.2	Chi-beta

For non-linear relationship between risk and return in the NSE, the author entered Chi-risk ( $\beta^2$ ) in the equation (Systematic risk =  $\beta$  std (R\_M)) then linearity and non-linearity relationships were tested. In accordance with table 4.4 above, the coefficients  $BETA_i$ ,  $(BETA_i)^2$  were obtained which are both positive and significant (3.96, 0.2). According to the results, it can be inferred that the relationship between systematic risk and return on stock is non-linear in the NSE 20 Share index. This could mean that being attractive to investors in this respect, they command a relatively low expected return over the riskless assets. The results are in keeping with another study conducted by Hansen (2012) which found out that residual risk has no effect on the expected returns of portfolios.

#### 4.4 Tests for stationarity of data

In this section, the researcher was interested in determining if a shift in time could change the distribution.

**Table 4.5: Regression analysis on Bonuses versus Systematic Risk**

Constant	Risk	Adjusted R <sup>2</sup>	F-Test	Observations
0.0000	0.445698614	0.090853065	0.000564952	13
(0.0004)	(0.11)		1.735726586	

#### Regression Statistics

Multiple R	0.007166356
R Square	5.13567E-05
Adjusted R Square	0.090853065
Standard Error	0.280788363
Observations	13

The results are significant at 0.05 level of significance

From Table 4.5 above, coefficient of determination ( $R^2 = 0.09$ ) indicated that 9% of observation explained the dependent variable. The calculated F, (1.73) was greater than critical F, (0.0005) therefore indicating systematic risk does have effect on bonuses. The beta coefficient showed that risk contribution to bonuses is 0.44 and therefore from the foregoing regression results between systematic risk and bonuses, there is a relative stronger positive relationship between systematic risk and bonuses.

These results could depict that all investors have the same expectations. In other words, they have the same probability distribution to estimate future rates of return. The results are supported by another study conducted by Muiruri, (2014) which discovered that there was a relationship between systematic risk and stock market return in sectors because

systematic risk and stock market return exhibits a strong negative autocorrelation, indicating that the stock market return is a function of more variable than systematic risk.

This findings are also consistent with Appendix I which revealed that Companies with high-risk posted high returns and from this results, investors in this market are rewarded for assuming additional risk. The findings are also amplified by another study conducted by Mudida (2010) which observed that the higher the systematic risk the higher the returns.

**Table 4.6: Regression Analysis on Systematic Risk versus Dividends**

Constant	Risk	Adjusted R <sup>2</sup>	F-Test	Observations
0.085942052	-0.02	0.032182402	1.565293339	18
(0.041)	(0.089)		0.228877234	

According to table 4.6 above, regression results between dividends and systematic risk show that the coefficient of determination ( $R^2 = 0.032$ ) and the beta coefficient is 0.051. The calculated F, 1.565 was greater than critical F, 0.22 therefore indicating systematic risk does have effect on dividends. Figures in parentheses are standard errors of the coefficients. The negative beta risk (-0.02) implied an inverse relationship between dividends and systematic risk.

These results are consistent with a study conducted by Salman (2002) which showed that companies when compensating investors, expect investors to be indifferent between receiving returns as dividends or as capital gains, meaning a lower dividend

implies greater capital gains and higher dividends implies a lower capital gain. The results in table 4.4 could also imply that there is a weak relationship between systematic risk and dividends in that only 3.2% of the observation explained the dependent variable. The significance indicated that the observations are not significant at 95% confidence level. This means that systematic risk has minimal effect on dividends. The results are in line with a study conducted by Otweyo (2014), which showed that Systematic risk is the variability caused by macroeconomic variables remains in the portfolio. It's not a constant figure during the length of existence of a security.

## **Chapter 5: Discussion, Conclusions and Recommendations**

### **5.1 Introduction**

This was the final chapter of the study. The study sought to answer three main research questions. These questions and their answers were summarized as follows.

### **5.2 Summary of the Findings**

#### **5.2.1 What is the firms' specific systematic risk levels and their effect on shareholders' bonuses among the companies listed on the NSE**

Results implied that there was a stronger relationship and therefore systematic risk had a bigger influence on bonuses. Results indicated linear correlation between systematic risk and return. The results means that there was a positive relationship between systematic risk and returns which could depict that with an increase of systematic risk, there is an increase in returns to shareholders. The results were supported by another study conducted by Ngene (2010) which asserted that systematic risk (market risk); Interest rates, recession and wars all represent sources of systematic risk because they affect the entire market and cannot be avoided through. The results could also depict that, the fact that investors replace their money with one or more sheets of the stock that future returns is high to be suffered and it seems essential to consider another factor such as risk besides return. A study done by Marrone (2014) established that investors have been seeking greater returns and abhor risk. Mudida (2010) argued that this type of risk affects a broad range of securities and can be mitigated only by being hedged.

**5.2.2 What is the relationship between stock category (i.e. agriculture, manufacturing, insurance, banking, commercial services, investment, energy & petroleum sector) and systematic risk among the companies listed on the NSE?**

The results indicated that there was a positive relationship between systematic risk and returns meaning that with an increase of systematic risk, there is an increase in returns to shareholders. Sample representation indicated that the lowest risks were registered with East African Breweries Limited, Equity Bank Limited and Barclays Bank Limited. These companies also posted the lowest returns to investors during the period. This could mean that the difference in risk levels could be as a result of the fluctuation of the price causing returns of some companies to fluctuate compared to the rest. This could also mean that the risks plays a small role of the variations in returns of firms listed at the NSE, while the bigger role was influenced by other factors. This is consistent with a study conducted by Chudhary (2010) which examined the relationship between stock returns and systematic risk based on capital asset pricing model (CAPM) in the Bombay Stock Exchange. The findings (about intercept and slop of CAPM equation that states intercept should be equal from zero and slop should be excess returns) revealed that residual risk had no effect on the expected returns of portfolios.

Further results showed that some companies (Kenya Airways, British American Tobacco Kenya Limited, Kenya Power Limited, Kenya Commercial Bank, and CFC Stanbic Holdings Limited) that did not pay bonuses, which could mean that the expected return on shareholders of the company without debt is a debt too.

From these results, it is quite evident that, Bonus share issue has been a powerful financial event which will help improve the stock price and keep the stock in the good

books. The findings also establishes a linear relationship between the systematic risk and return on stock among the top 20 companies in NSE.

### **5.2.3 What is the firms' specific systematic risk levels and their effect on shareholders' dividends among the companies listed on the NSE?**

Results indicated that there is a weak relationship between risk and dividends and therefore the effect of systematic risk on dividends is minimal. The negative beta implied an inverse relationship between dividends and systematic risk. This is explained by the fact that companies when compensating investors expect investors to be indifferent between receiving returns as dividends or as capital gains, meaning a lower dividend implied greater capital gains and higher dividends implied a lower capital gain. The relationship between systematic risk and dividends was found to be weak whereas the relationship was much stronger between systematic risk and bonuses.

Results revealed that Kenya Airways, British American Tobacco Kenya Limited, Kenya Power Limited, Kenya Commercial Bank, and CFC Stanbic Holdings Limited did not pay bonuses to shareholders during the period under investigation. Further results showed that, Kenya Electricity generating Company Limited had the highest risk followed by Scangroup Limited and British - American Investments Company ( Kenya) Limited. The same companies also posted impressive returns to the shareholders. These results clearly could mean that customer satisfaction is a key factor with a significant impact on stock returns. The findings are consistent with a study conducted by Hwang, Gao, and Owen, (2014) which found out that that the size effect is key to returns of a stock. The small firm effect in which small-capitalization stocks earn higher risk adjusted returns than

large capitalization stocks. The study argued that a negative relationship between size and returns identifies idiosyncratic risk as the differentiator explaining the higher levels.

Further results showed that companies that paid the highest dividends to shareholders included, Scangroup Limited. Cooperative Bank of Kenya, KenolKobil Limited, Bamburi Cement Limited and Centum. Centum posted the highest bonuses followed by British - American Investments Company (Kenya) Limited. This scenario might have been caused by companies to woo new shareholders with bonuses or trying to retain investors. This means that good performance is measured by how better off the shareholder is at the end of the period than he was at the beginning. This is in line with a study conducted by Kapil and Sundar (2009) which implied that shareholder satisfaction is a key factor with a significant impact on stock returns. Any investor's main interest is to increase their wealth.

From the results it is clear that there are a lot of inefficiencies in the NSE, and that industry wide practices are far from uniform. For instance, returns tend to vary quite significantly from industry to industry. Some sectors have extremely low returns, while others have very high returns and vice versa. Macroeconomic and environmental factors that are specific to each sector may also be responsible for some of the unique and divergent results exhibited by this study which could affect the returns to the investors in the NSE.

### **5.3 Recommendations**

#### **5.3.1 Policy**

Based on the findings of this research and the existing literature, the author has the following recommendations; investors should look at the risk portfolio as a whole based on the variance of the returns. Considering the portfolios with the same levels of risk, they

will each yield different returns. An investor will then target points along the frontier based on the attitude towards risk. No portfolio can dominate any other on this frontier. Portfolios have different returns and risk measures where the higher the risk the higher the expected returns.

### **5.3.2 Practice**

There's a need to differentiate between systemic and unsystematic risk to ensure that when considering the components to consider for compensation companies do not have variables that do not apply and or cannot be measured thereby halting the process.

Investors must receive a higher expected return to tempt them to take on additional risk. Assets that oscillate one-for-one with the market ( $\beta_j = 1$ ) are said to be neutral. The amount of unsystematic risk can be reduced through appropriate diversification. Also known as "Business Risk", "Liquidity and Marketability Risk", "financial risk", "credit risk" and "political risk.

### **5.4 Area/s for further Research**

Future researchers should establish unsystematic risk and return relationship at the Nairobi Stock Exchange. Future researchers should establish if different economic situations affect the risk and return relationship.

Further, future research could perform similar testing's in recent years to investigate if the relationship is more significant than in the time span investigated in this study. Another suggestion for future research is to utilize a larger sample than the one observed in this research. Due to the panel data study design, the sample was only able to include top 20 listed companies in NSE. Future researchers should establish risk return relationship for companies not listed at Nairobi Stock Exchange.

## REFERENCES

- Abascal, E. M. (2012). *Finance for manager*. UK: McGraw- Hill Higher Education.
- Bloomberg. M. (2016). *Bloomberg Business*. Retrieved from Bloomberg.com:  
<http://www.bloomberg.com/quote/KNSMIDX:IND>
- Bollerslev, T., Marrone, J., Xu, L., & Zhou, H. (2014). Stock return predictability and variance risk premia: statistical inference and international evidence. *Journal of Financial and Quantitative Analysis*, 1-29.
- Fabozzi, F. J., Modigliani, F., & Jones, F. J. (2007). *Capital Markets Institutions and Instruments*. New Delhi: Asoke K Ghosh, Prentice - Hall of India.
- Fernandez, P. (2015). *Shareholders Value Creation: A defination*. Spain: IESE Business School, university of Navarra.
- Gatfaoui, H. (2012). *How does systematic risk impact stocks? A study on the French Financial Market*. Paris: TEAM Pole Finance, Univerist of Paris.
- Hansen, L. P. (2012). Challenges in identifying and measuring systematic risk. *National Bureau of economic research*, 4-15.
- Hwang, T., Gao, S., & Owen, H. (2014). Markowitz Efficeny and Size Effect : Evidence from the UK stock market. *Quantitative Finance and Accounting*, 721-750.
- Jin-Chuan, D., & Jason, W. (2009). Systematic risk and the price structure of individual equity options. *The review of financial studies*, 2-27.
- Kapil, R. T., & Sundar, G. B. (2009). Customer Satisfaction and Stock Returns Risk. *Journal of Marketing*, 184-197.

- Kothari, C. R. (2004). *Reserach methodology methods and techniques*. New Delhi: New Age international Publishers.
- Kazi. M. (2008). Systematic risk factors for Australian stock market returns: a cointegration analysis. *Australasian Accounting, Business and Finance Journal*, 2-3.
- Markowitz, H. (1952). Portfolio Selection. *Journal of Finance* 7.
- Mehrara, Z. F. (2014). *The relationship between systematic risk and returns in Tehran Stock exchange using CAPM*. Switzerland: International Letters of Social and Humanistic Sciences.
- Mudida, R., & Ngene, G. (2010). *Financial Management*. Nairobi: Focus Publishers Limited.
- Muiruri, P. M. (October 2014). Effects of Estimating Systematic Risk in Equity Stocks in the Nairobi Securities Exchange. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 228-248.
- Nairobi Securities Exchange*. (2016, January 12). Retrieved from nse.co.ke: <https://www.nse.co.ke/nse/history-of-nse.html>
- Otweyo, E. S. (2014). *Market factors that affect returns for companies quoted at the Nairobi Securities Exchange*. nairobi: KCA University.
- Reily, F. K., & Brown, K. C. (2012). *Analysis of Investments and Management of Portfolios*. USA: South Western Cengage Learning.
- Schwarcz, S. L. (2004). Systematic Risk. *The Georgetown Law Journal*, 57.

- Statistics, K. N. (2017), February 9yh). *KNBS*. Retrieved from Kenya National Bureau of Statistics: <http://www.knbs.or.ke/>
- Vaclavik, M., & Jablonsky, J. (2012). Revision of Modern portfolio theory optimization model. *Central European Journal of Operations Research*, 473-483.
- Waithaka, J. N. (2014). *The effectiveness of the NSE twenty share index representing the overall market performance of the Nairobi Security Exchange*. Nairobi: University of Nairobi.
- World Bank Group. (2017). *Global Economic Prospects, Weak Investment in uncertain times*. United States: World Bank Group.

## APPENDICES

### APPENDIX 1: LIST OF FIRMS LISTED AT NSE

#### AGRICULTURAL

1. Eaagads Ltd
2. Kakuzi Ltd
3. Kapchorua Tea Co. Ltd
4. The Limuru Tea Co. Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

#### AUTOMOBILES & ACCESSORIES

8. Car & General (K) Ltd
9. Marshalls (E.A.) Ltd
10. Sameer Africa Ltd

#### BANKING

11. Barclays Bank of Kenya Ltd
12. CFC Stanbic of Kenya Holdings Ltd
13. Diamond Trust Bank Kenya Ltd
14. Equity Bank Ltd
15. Housing Finance Co. Kenya Ltd
16. I&M Holdings Ltd
17. Kenya Commercial Bank Ltd
18. National Bank of Kenya Ltd
19. NIC Bank Ltd
20. Standard Chartered Bank Kenya Ltd
21. The Co-operative Bank of Kenya Ltd

#### COMMERCIAL AND SERVICES

22. Express Kenya Ltd
23. Hutchings Biemer Ltd

24. Kenya Airways Ltd
25. Longhorn Kenya Ltd
26. Nation Media Group Ltd
27. Scangroup Ltd
28. Standard Group Ltd
29. TPS Eastern Africa Ltd
30. Uchumi Supermarket Ltd

#### **CONSTRUCTION & ALLIED**

31. ARM Cement Ltd
32. Bamburi Cement Ltd
33. Crown Paints Kenya Ltd
34. E.A.Cables Ltd
35. E.A.Portland Cement Co. Ltd

#### **ENERGY & PETROLEUM**

36. KenGen Co. Ltd
37. KenolKobil Ltd
38. Kenya Power & Lighting Co Ltd
39. Total Kenya Ltd
40. Umeme Ltd

#### **INSURANCE**

41. British-American Investments Co.(Kenya) Ltd
42. CIC Insurance Group Ltd
43. Jubilee Holdings Ltd
44. Kenya Re Insurance Corporation Ltd
45. Liberty Kenya Holdings Ltd
46. Pan Africa Insurance Holdings Ltd

#### **INVESTMENT**

47. Centum Investment Co Ltd
58. Olympia Capital Holdings Ltd
59. Trans-Century Ltd

#### **INVESTMENT SERVICES**

50. Nairobi Securities Exchange Ltd Ord 4.00

**MANUFACTURING & ALLIED**

51. A.Baumann & Co Ltd

52. B.O.C Kenya Ltd

53. British American Tobacco Kenya Ltd

54. Carbacid Investments Ltd

55. East African Breweries Ltd

56. Kenya Orchards Ltd

57. Mumias Sugar Co. Ltd

58. Unga Group Ltd

**Source:** NSE (2016)