

**THE EFFECT OF SIZE ON THE PERFORMANCE OF MUTUAL FUNDS IN  
KENYA**

**BY**

**BEN WAMBUGU MAINA**

**D61/60874/2011**

**RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE DEGREE IN MASTER OF BUSINESS  
ADMINISTRATION, UNIVERSITY OF NAIROBI**

**OCTOBER, 2013**

**DECLARATION**

This project is my original work and has not been presented in any other University for the award of any degree.

Signature.....

Date.....

BEN WAMBUGU MAINA

D61/60874/2011

**SUPERVISORS APPROVAL**

This work has been submitted for consideration with my approval as the supervisor.

Signature.....

Date.....

DR. ADUDA JOSIAH O

Chairman: Department of Finance and Accounting

## **DEDICATION**

This research paper is dedicated to my parents Mr. and Mrs.Wambugu, my sister Linda Wangechi and my brother Joe Wairiuko who have been my constant source of inspiration. They have given me the discipline and drive to tackle this task with enthusiasm and determination. Without their love and support this project would not have been possible.

## **ACKNOWLEDGEMENT**

I take this opportunity to express my profound gratitude and deep regards to my supervisor, Dr. Josiah Aduda for his exemplary guidance, immense support and positive criticism throughout the course of my project. The encouragement and guidance given by him time to time shall give me the drive in the journey of life on which I am about to embark.

I also take this opportunity to express a deep sense of gratitude to The Retirement Benefits Authority, The Nairobi Stock Exchange and the respective fund managers in Kenya for their cordial support, valuable information and guidance, which helped me in completing this task through various stages.

I am obliged to my colleagues at Kenya Commercial Bank for the valuable information provided by them in their respective fields. I am grateful for their cooperation during the period of my assignment. I am also grateful to my employer for the patience and opportunity provided to me to be able to work on this project.

I am also grateful to the University of Nairobi for according me the opportunity and facilities to advance my knowledge. I am also thankful to my family for their great patience and support as I prepared this project. Most of all, I am grateful to God for giving me the strength and ability to finish and present my project.

## **ABSTRACT**

According to RBA, there has been a gradual and constant growth in the size of mutual funds in Kenya in the recent years. Theoretically, the expected relativity of fund size and their performance is not explicit; some studies insist on a positive relationship, others a negative relationship while others suggest no correlation at all between the two variables. Contextually most of the studies on mutual funds have been done in European, Asian and American markets but few studies have been done locally. A question that remains unanswered after these studies is, “How does size affect the performance of mutual funds in Kenya?”

The research framework was descriptive one hence a descriptive survey research study was preferred. The population of interest in this study was the types of mutual funds in Kenya as at the start the year 2008. There were 33 registered Mutual Funds in Kenya at the end of 2008 under the management of 11 mutual fund managers. This paper utilized secondary data. Correlation coefficients between fund size and performance was computed to assess the degree of relationship between fund size and performance of mutual funds. The study used multiple linear regression equation and the method of estimation was Ordinary Least Squares (OLS) so as to establish the relationship between mutual fund size and performance.

The study found that there was a positive relationship between fund performance and fund size. The study found that operation risks, transactions cost and fund size were statistically significant to affecting mutual fund performance in Kenya. The study found that risk in the management of mutual funds cannot be ignored in any investment venture. The risk of a security is the variability in its expected future returns. The study recommends that there is need for the management of mutual funds to mitigate operation risk involved in the mutual fund investment as it was found that high risk securities have high dispersion around the mean while low risk securities will have a low dispersion around the mean. There is need to reduce the transaction cost involved in the mutual funds acquisition, as it was found that increase in transaction cost negatively affects the performance of mutual funds in Kenya.

## TABLE OF CONTENTS

|  |            |
|--|------------|
| <b>DECLARATION</b> .....   | <b>i</b>   |
| <b>DEDICATION</b> .....  | <b>ii</b>  |
| <b>ACKNOWLEDGEMENT</b> .....   | <b>iii</b> |
| <b>ABSTRACT</b> .....  | <b>iv</b>  |
| <b>TABLE OF CONTENT</b> .....  | <b>iv</b>  |
| <b>LIST OF ABBREVIATIONS</b> .....   | <b>vii</b> |
| <b>CHAPTER ONE:</b> .....  | <b>1</b>   |
| <b>INTRODUCTION</b> .....  | <b>1</b>   |
| 1.1 Background of the Study.....   | 1          |
| 1.1.1 The Performance of Mutual Funds in Kenya .....                           | 3          |
| 1.1.2 Size of Mutual Funds in Kenya .....                                      | 4          |
| 1.1.3 Relationship between Size and Performance of Mutual Funds in Kenya ..... | 5          |
| 1.2 Research Problem.....  | 6          |
| 1.3 Objectives of the Study .....  | 7          |
| 1.4 Significance of the Study .....  | 7          |
| <b>CHAPTER TWO:</b> .....  | <b>9</b>   |
| <b>LITERATURE REVIEW</b> .....   | <b>9</b>   |
| 2.1 Introduction .....   | 9          |
| 2.2 Review of Theories .....   | 9          |
| 2.2.1 The Theory of Portfolio Selection .....                                  | 9          |
| 2.2.2 The Arbitrage Pricing Theory.....  | 10         |
| 2.2.3 Capital Asset Pricing Method.....  | 11         |
| 2.3 Review of Empirical Studies.....   | 12         |
| 2.4 Conclusion.....  | 18         |
| <b>CHAPTER THREE:</b> .....  | <b>19</b>  |
| <b>RESEARCH METHODOLOGY</b> .....  | <b>19</b>  |
| 3.1 Introduction .....   | 19         |
| 3.2 Research Design.....   | 19         |
| 3.3 Population and Sample.....   | 19         |
| 3.4 Data Collection.....   | 19         |

|  |           |
|--|-----------|
| 3.5 Data Analysis .....  | 20        |
| 3.5.1 Regression Analysis .....  | 20        |
| 3.5.2 Pearson’s Correlation Coefficient .....                                      | 21        |
| 3.6 Data Validity and Reliability.....   | 22        |
| <b>CHAPTER FOUR.....</b>   | <b>23</b> |
| <b>DATA ANALYSIS AND INTERPRETATION.....</b>                                       | <b>23</b> |
| 4.1 Introduction .....   | 23        |
| 4.2 Regression Analysis .....  | 23        |
| 4.3 Correlation Analysis.....  | 29        |
| 4.4 Anova Analysis .....   | 30        |
| 4.5 Summary and Interpretation of Findings .....                                   | 30        |
| <b>CHAPTER FIVE .....</b>  | <b>33</b> |
| <b>SUMMARY, CONCLUSIONS AND RECOMMENDATIONS .....</b>                              | <b>33</b> |
| 5.1 Summary .....  | 33        |
| 5.2 Conclusions .....  | 34        |
| 5.3 Limitation of the Study .....  | 34        |
| 5.4 Policy Recommendations.....  | 35        |
| 5.5 Suggestions for Further Research .....   | 36        |
| <b>REFERENCES.....</b>   | <b>37</b> |
| <b>APPENDICES .....</b>  | <b>43</b> |
| Appendix I: Registered Mutual Funds in Kenya as at Dec 31 <sup>st</sup> 2008 ..... | 43        |
| Appendix II: Summary of Data .....   | 45        |

## **LIST OF ABBREVIATIONS**

|      |   |
|------|---|
| APT  | Arbitrage Pricing Theory                |
| CAPM | Capital Asset Pricing Model             |
| CMA  | Capital Markets Authority               |
| FMA  | Fund Managers Association               |
| GDP  | Gross Domestic Product                  |
| MFI  | Mutual Fund Industry                    |
| MPT  | Modern Portfolio Theory                 |
| RBA  | Retirements Benefits Authority          |
| SPSS | Statistical Software of Social Sciences |



## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background of the Study**

Historians are uncertain about the origins of investment funds; some site that it was launched in Netherlands in 1822 by King William. Others point to a Dutch merchant named Adriaan van Ketwich whose investment trust created in 1774 may have given the king the idea. Ketwich probably theorised that diversification would increase the appeal to small investors with minimal capital. The name of Eendragt Maakt Magt translates to “unity creates strength”. The next wave of near-mutual funds included an investment trust launched in Switzerland in the 1880s ([www.investopedia.com/articles/mutualfund/05/mfhistory.asp](http://www.investopedia.com/articles/mutualfund/05/mfhistory.asp)).

The idea of pooling resources and spreading risk took root in Great Britain and France before eventually gaining popularity in the United States in the 1890s. The creation of the Massachusetts Investors’ Trust in Boston, Massachusetts, herald the arrival of mutual funds in the United States ([www.investopedia.com/articles/mutualfund/05/mfhistory.asp](http://www.investopedia.com/articles/mutualfund/05/mfhistory.asp)).

A mutual fund is a means of investing that enables individuals to share the risks of investing with other investors. All contributors to the fund experience an equal share of gains and losses for each dollar or shilling invested. A mutual fund owns the securities of several corporations. It pools money from hundreds and thousands of investors to construct a portfolio of stocks, bonds, real estate, or other securities, according to the kind of investments the mutual fund trades. Investors purchase shares in the mutual fund as if it was an individual security. Fund managers hired by the Mutual Fund Company are paid to invest the money that the investors have placed in the fund. Heeding the adage "Don't put all your eggs in one basket" the holders of mutual fund the shares are able to gain the advantage of diversification which might be beyond their financial means individually ([www.davidcole.net/mutual\\_funds/money](http://www.davidcole.net/mutual_funds/money)).

Mutual funds are usually run by Fund Managers whose responsibility is implementing a fund’s investment strategy and managing its portfolio trading activities. The funds can be

managed by one person or by a team. Fund managers are paid a fee which is usually a percentage of the funds' average assets under management. The fund managers must possess a high level of educational and professional credentials and appropriate investment managerial experience ([www.investopedia.com/terms/f/fundmanager.asp](http://www.investopedia.com/terms/f/fundmanager.asp)).

United States is the world leader in the Mutual Fund Industry (MFI) with asset base approximating \$11.6 trillion under management by the end of year 2011. The mutual fund industry in Africa is among the lowest in the world accounting for 13% when combined with Asia pacific. ([www.ici.org/pdf/2012\\_factbook.pdf](http://www.ici.org/pdf/2012_factbook.pdf))

In Kenya, Mutual Funds are referred to as unit trusts and investors can only invest in them through licensed companies. Unit trusts are the small investor's answer to achieving wide investment diversification without the need of prohibitive sums of money ([www.cma.or.ke](http://www.cma.or.ke)). Returns are periodically distributed to investors, for example yearly or every six months, and some funds allow some investors to redeem their funds at any one time within a few days' notice. The terms of investing and the rates of return vary based on the type mutual fund and the company offering them.

Only Mutual Funds that are approved by the Capital Markets Authority (CMA) may be offered for sale to the Kenyan public. Such schemes must comply with the Capital Markets Act Cap 485 A and also the Capital Markets (Collective Investment Schemes) Regulations, 2001. An approved fund can easily be identified by the cover of its prospectus which contains a statement that a copy of the prospectus has been lodged and approved by the CMA. Although there are laws and guidelines to aid investor protection, it is ultimately the investor's responsibility to evaluate the suitability, profitability and viability of an investment. An investor must read the information which is required to be provided in the prospectus and make the decision whether to invest or not, based on their own circumstance and attitude towards risk.

All locally licensed mutual fund companies offer the option to invest in multiple types of mutual funds which are engaged in different types of financial investments. Mutual Funds in

Kenya fall into six main categories: There is the Money Market Fund which invests in the money markets that is made up of short-term treasury bills & bonds, cash deposits and accounts. There is also Fixed Income Fund which invests in securities that give specific returns on specific dates i.e. treasury bills, bonds and cash deposits. Balanced Funds are also used to invest in a diversified portfolio of shares, bonds and the money markets, Equity Fund invest in company shares through the stock market, Bond Fund invests in government and corporate bonds and Managed Fund pools the collective investments of the employees in a company with returns made available upon their retirement.

In Kenya, mutual Funds are regulated by the CMA ([www.cma.or.ke](http://www.cma.or.ke)), a corporate body set up in 1989 through an Act of Parliament with the mandate of promoting, regulating and facilitating the development of orderly, fair and efficient capital markets in Kenya.

### **1.1.1 The Performance of Mutual Funds in Kenya**

Mutual Fund performance in Kenya is evaluated in terms of capital growth, periodical returns in the form of dividends, interest received and capital gains realised from the appreciation of the assets invested in and value funds respectively. The survival of the fund is solely determined by its performance in the market, that is, persistent increase in capital for growth funds and constant returns for value funds. As the MFI in Kenya grows, there is need to move the performance dimension away from straightforward performance measures and benchmarking, to style based studies which also present information regarding persistence in fund performance, fund characteristics, behavioural patterns, stock-picking and timing abilities of managers ( Melih, 2010) .

Fund size is one of the key elements in evaluating for potential performance of mutual funds. Fund size has been studied in different countries but the results have not been conclusive enough to be regarded as universal truth. According to study conducted in the US by Chen, Hong, Huang, & Kubik (2004), they obtained evidence of diminishing returns to scale but which was not true for performance of funds located outside the US and funds in the US that invest overseas are not negatively affected by scale (Ferreira, Miguel, & Romas, 2006, p.

47). This leads us to the conclusion that the effect of fund size on Mutual Fund performance still needs more research.

### **1.1.2 Size of Mutual Funds in Kenya**

Performance of Mutual Funds is evidently determined by several factors. Their significance varies from economy to economy. In Kenya, Mutual Funds have considerably grown in acceptance and popularity in recent years. This growth has been evidenced both in numbers and the size of mutual funds. The number of approved mutual funds in Kenya has grown from virtually zero in 2001 to 11 in 2008 and 16 in 2012. The size of the industry has also grown to Kshs. 29 Billion (USD 340million) as at end of June 2011. However, compared to more developed Mutual Fund markets, the Kenyan MFI is much smaller. For example, it is 300 times smaller than the South African Mutual Fund Industry pointing to a lot of room for growth.

Given the number of players in the industry, and its contribution to the country's Gross Domestic Product (GDP), there is no doubt that this trend will continue. However, the effect of growth in the Mutual Fund differs greatly from one country to the other and from one research method to the other. Some academics claim that the mutual fund industry suffers from diminishing returns to scale. This has been supported by evidence from a study conducted in the US by Chen et al (2004). Another school of researchers claim that the MFI enjoys economies of scale. This is a theory developed by Latzko (1998) after a detailed study of Mutual Funds in the US. Since many mutual fund expenses are fixed costs, asset growth should reduce the ratio of fund expenses to average net assets and consequently lower the fund's average cost. Even though the two groups of researchers conducted study on the same country's mutual fund during the same duration, they each came up with conflicting deductions. This goes to show how controversial the effect of fund size is in the performance of mutual funds.

According to Kenya's blue print Vision 2030, the key goal in the area of financial services is to raise savings and investment rates from 17 % to 30 % of GDP. This vision will definitely

amplify the effect of fund size on the performance of Mutual Funds as considerable growth is expected in the industry.

It is against this background that the research will be undertaken with the main objective of studying the relationship between fund size and its impact on the performance of mutual funds in Kenya.

### **1.1.3 Relationship between Size and Performance of Mutual Funds in Kenya**

Size of mutual funds is usually measured by the amount of asset under the fund manager's control for investment. Funds with a bigger asset base are therefore deemed larger than those with a lower asset base without regard even to the physical and geographical distribution and size of the mutual funds. Fund performance on the other hand is evaluated in terms of capital growth, periodical returns in the form of dividends, interest received and capital gains realised from the appreciation of the assets invested in and value funds respectively. Some studies conducted in the past have reported positive results for the size-performance relationship while others have reported negative results. Other studies have even concluded that there exists no relationship between the two variables. This can be attributed to general and fund-specific laws and regulation in the different countries. The judicial system quality measure and the approvals variable are both positively and significantly related to the size of the fund industry, suggesting that a stronger legal system benefits the fund industry.

According to Grinblatt and Titman (1989), small funds could outperform larger ones because of their impact on security prices when moving in and out of securities is smaller. Manuel and Moerth (2005) and Hishamuddin (2006) also investigated the relationship between fund size and performance and found a negative relationship between fund size and return. Gitagia (2013) from his study that fund size and fund performance are negatively correlated so that as fund's assets rise, it is more than likely that the fund manager will be less flexible in taking decisions and will be facing a great deal of bureaucratic inefficiency as do industrial firms. Christopherson et al (2002) also concur with the idea that there might exist an inverse relationship between net asset value and performance for small-cap investment managers. Manuel and Moerth(2005) investigated the relationship between hedge fund size and

performance and found a negative relationship between fund size and return, except in the case of smaller funds. Another school of academics believe that there exists a positive relationship between fund size and performance. Dellva and Olson (1998) in their study discovered that large funds were able to achieve economies of scale and, thus, their expense ratios were lower. Keswani(2010) obtained no significant relationship between fund size and performance variables. There was no conclusive evidence that the fund size affected performance of Balanced Mutual Funds, whether micro, small, medium or large sized funds.

## **1.2 Research Problem**

According to RBA, there has been a gradual and constant growth in the size of mutual funds in Kenya in the recent years. Performance of the funds has also changed drastically from year to year. Theoretically, the expected relativity of fund size and their performance is not explicit; some studies insist on a positive relationship, others a negative relationship while others suggest no correlation at all between the two variables.

A great number of academics have emphasized that a negative relationship does exist; Grinblatt and Titman (1989) concluded that small funds could easily outperform larger funds. The explained that the difference arose due to the different benchmarks used in the two studies. Ciccotello and Grant (1996) also supported this hypothesis that size does affect performance negatively. Dahlquist et al (2000) also found that smaller equity funds did perform better than larger equity funds.

Dellva and Olson (1998) reported positive results from their study for the size-performance relationship which was also supported by Otten and Bams (2002). In line with this hypothesis, Indro et al (1999) and Christopherson et al (2002) concur with the idea that there might exist an inverse relationship between net asset value and performance for small-cap investment managers. Grinblatt and Titman (1994) in a second research on the same sample as in 1989 found that fund size has no effect on performance. This was in great contrast to their first hypothesis. Elton, Gruber, Brown, & Goetzmann (2007) also found no relationship between fund size and performance.

Contextually most of the studies on mutual funds have been done in European, Asian and American markets but few studies have been done locally. Kagendo (2009) and Gitagia (2013), in their study, identify some of the main factors affecting the performance in Kenya as fund characteristics, behavior of mutual fund managers, stock-picking and timing abilities of managers. They however but fail to study how size; the most dynamic of the factors, affects the performance of mutual funds in Kenya. Kagunda (2011) did a research on the effect of asset allocation on mutual fund performance but ignored the effect of the overall size of the asset under management to the performance of the fund. Different countries have different economic conditions and characteristics. This thus affects the effect of fund size on performance and which makes it necessary to consider each country separately in order to find out the actual effect of size on mutual funds in Kenya. A question that remains unanswered after these studies is, “How does size affect the performance of mutual funds in Kenya?”

### **1.3 Objectives of the Study**

The main objective of this research was to find how fund size affects the performance of mutual funds in Kenya and consequently their attractiveness as an investment option.

### **1.4 Significance of the Study**

Kenya plans to take action to enhance the use of pensions, insurance, capital and securities markets in realising the investment goals set for Vision 2030. The overall research will help Kenya in achieving Millennium Development Goals (MDGs) and Vision 2030 which heavily rely on mobilization of small savings and pooling of resources to fuel investments in the country.

The research aims to clarify to potential investors and employees who will at one time become retirees or need a form of security or insurance on how mutual funds are also a viable investment option just like the others that are more common like equity. An extract from the document Vision 2030 states, "Financial services will play a critical role in the next phase of the development of our country by providing better intermediation between savings and investments than at present.”

The research findings will also go a long way in providing understanding of the field of mutual funds for potential investors. Understanding of mutual funds provides a chance for investors to not only consider it but also prefer it as an investment option. According to the field of behavioural studies, investors have an aversion to ambiguity. People are fearful of ambiguous situations where they feel they have little information about the possible outcomes. By evaluating the factors that influence the performance of mutual funds, then such ambiguity would be eliminated.

The findings of my research also aim to aid fund managers in the selection and development of portfolios. Relation between mutual fund size and performance of mutual funds should provide a means of evaluating the best and optimal way of investing additional funds for maximum returns. This would thus help them fulfill their obligation in the agency relation that exists between them and the owners of the funds. The investors expect the fund managers to act in their best interest by respecting the risk profiles favoured by the investors and ensuring maximum returns for that level of risk desired.

The research findings of this study will pave way for further research in mutual funds and finance in general. A lot of literature on finance is available in the world. However, only a small portion of that literature has its sources in Africa and thus also Kenya. In recent years, mutual funds have gathered great popularity and which is on an upward trend. There have also been great changes in the field of finance which have hatched the need for further research. It is for this reason there is need to find out more about mutual funds in Kenya if we are to make our contribution to the world of finance as a country. Kenya is a piece in a big financial jigsaw puzzle that can never be completed without our contribution.

The research findings will also assist potential investors in making an informed decision on the investment vehicles available. This research will be able to provide summated financial information and evaluate performance of mutual funds in Kenya against their asset bases. Such evaluation that would provide explicit return rate to the world should be able to make clear to the investor on the best investment choice for him.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter takes an in-depth review of the various theories, concepts and past research findings relating to the asset base of the mutual funds and how they relate to persistence of returns of the mutual funds. The conceptual framework of the research will also be discussed in this chapter.

#### **2.2 Review of Theories**

Over forty years ago, Sharpe (1966) outlined methodologies to examine mutual fund performance within the context of three closely related areas: portfolio, selection, the Capital Asset Pricing Model (CAPM), and the general behavior of stock market prices. It is however important to note that it is impossible to rely upon a single benchmark as a reliable indicator of even past performance.

##### **2.2.1 The Theory of Portfolio Selection**

Portfolio selection theory defines the roles of three market participants: the portfolio analyst, the security analyst, and the investor. Works by Markowitz (1955), Sharpe (1963), and Fama (1965) outline market taxonomy.

Modern Portfolio Theory (MPT) is a theory of finance that attempts to maximise a portfolio's 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. Although MPT is widely used in practice in the financial industry and several of its creators won a Nobel prize for the theory. In recent years the basic assumptions of MPT have been widely challenged by fields such as behavioural finance.

MPT 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 any individual asset. This is possible, intuitively speaking, because different types of assets often

change in value in opposite ways. For example, to the extent prices in the stock market move differently from prices in the bond market, a collection of both types of assets can in theory face lower overall risk than either individually. But diversification lowers risk even if assets' returns are not negatively correlated-indeed, even if they are positively correlated.

More technically, MPT models an asset's return as a normally distributed function (or more generally as an elliptically distributed random variable ), defines risk as the standard deviation of return, and models a portfolio as a weighted combination of assets, so that the return of a portfolio is the weighted combination of the assets' returns. By combining different assets whose returns are not perfectly positively, MPT seeks to reduce the total variance of the portfolio return. MPT also assumes that investors are rational and markets are efficient.

MPT was developed in the 1950s through the early 1970s and was considered an important advance in the mathematical modeling of finance. Since then, many theoretical and practical criticisms have been leveled against it. These include the fact that financial returns do not follow a Gaussian distribution or indeed any symmetric distribution, and that correlations between asset classes are not fixed but can vary depending on external events. Further, there is growing evidence that investors are not rational and markets are not efficient. Finally, the low volatility anomaly conflicts with CAPM's trade-off assumption of higher risk for higher return. It states that a portfolio consisting of low volatility equities (like blue chip stocks) reaps higher risk-adjusted returns than a portfolio with high volatility equities (like illiquid penny stocks). A study conducted by Myron Scholes, Michael Jenson, and Fischer Black in 1972 suggests that the relationship between return and beta might be flat or even negatively correlated ([www.wikipedia.com](http://www.wikipedia.com) ).

### **2.2.2 The Arbitrage Pricing Theory**

The Arbitrage Pricing Theory (APT) was developed primarily by Ross (1976). It is a one-period model in which every investor believes that the stochastic properties of returns of capital assets are consistent with a factor structure. Ross argues that if equilibrium prices

offer no arbitrage opportunities over static portfolios of the assets, then the expected returns on the assets are approximately linearly related to the factor loadings.

Ross' (1976) heuristic argument for the theory is based on the preclusion of arbitrage. Ross' formal proof shows that the linear pricing relation is a necessary condition for equilibrium in a market where agents maximize certain types of utility. His subsequent work derives either from the assumption of the preclusion of arbitrage or the equilibrium of utility-maximization. The APT is a substitute for the CAPM in that both assert a linear relation between assets' expected returns and their covariance with other random variables. The covariance is interpreted as a measure of risk that investors cannot avoid by diversification. The slope coefficient in the linear relation between the expected returns and the covariance is interpreted as a risk premium. Such a relation is closely tied to mean-variance efficiency.

The APT lends itself to various practical applications due to its simplicity and flexibility. The three areas of applications for APT are asset allocation, the computation of the cost of capital, and the performance evaluation of managed funds.

### **2.2.3 Capital Asset Pricing Method**

The capital asset pricing model (CAPM) of Sharpe (1964) and Lintner(1965) were the pioneers of the asset pricing theory (resulting in a Nobel Prize for Sharpe in 1990). Before CAPM, there were no asset pricing models built from first principles about the nature of tastes and investment opportunities and with clear testable predictions about risk and return(Fama, 2003).

CAPM is widely used in applications, such as estimating the cost of equity capital for firms and evaluating the performance of managed portfolios. The CAPM builds on Markowitz' (1952- 1959) mean-variance portfolio model. In Markowitz' model, an investor selects a portfolio at time  $t-1$  that produces a random return  $R_{pt}$  at  $t$ . The model assumes that investors are risk averse and, when choosing among portfolios, they care only about the mean and variance of their one-period investment return. The model's main result follows from these assumptions. Specifically, the portfolios relevant for choice by investors are mean-variance

efficient, which means; they minimize portfolio return variances  $2(R_{pt})$ , given expected return,  $E(R_{pt})$  they maximize expected return given variance.

The attraction of the CAPM is its powerfully simple logic and intuitively pleasing predictions about how to measure risk and about the relation between expected return and risk. Unfortunately, perhaps because of its simplicity, the empirical record of the model is poor – poor enough to invalidate the way it is used in applications. The model's empirical problems may reflect true failings, but they may also be due to shortcomings of the empirical tests, most notably, poor proxies for the market portfolio of invested wealth, which plays a central role in the model's predictions. We argue, however, that if the market proxy problem invalidates tests of the model, it also invalidates most applications, which typically borrow the market proxies used in empirical tests.

Sharpe(1964) and Lintner(1965) add two key assumptions to the Markowitz model to identify a portfolio that must be efficient if the market is to clear. The first is complete agreement: Given market clearing prices at  $t-1$ , investors agree on the joint distribution of asset returns from  $t-1$  to  $t$ . And it is the true distribution, that is, the distribution from which the returns we use to test the model are drawn.

The second assumption is that there is borrowing and lending at a risk-free rate  $R_f$ , which is the same for all investors and does not depend on the amount borrowed or lent. Such unrestricted risk-free borrowing and lending implies a strong form of Tobin's (1958) separation theorem.

### **2.3 Review of Empirical Studies**

This section is devoted to the review of all studies relating to mutual fund performance and size of fund. The topic is not short of literature and different opinions and findings have been well presented.

The first academics to discover an effect of fund size on the performance of Mutual Fund performance are Grinblatt and Titman (1989). They came up with a hypothesis that small

funds could outperform larger ones because their impact on security prices when moving in and out of securities is smaller. On the other hand, they also hypothesized that larger funds could outperform smaller ones as a result of economies of scale and lower transaction costs. In forming a quintile (sample or population is divided into fifths) portfolios based on the funds' net asset values as at the beginning of their period of investigation, Grinblatt and Titman (1989) obtain results consistent with their first hypothesis. The smallest quintile of funds outperformed the other quintiles and it was the only quintile that was able to maintain positive abnormal returns significant at the one per cent level. Even after controlling for the fact that the smallest quintile contains more aggressive growth and growth funds than the others, the size effect remains. However, the authors' second hypothesis was also partly confirmed. Transaction costs are inversely related to fund size, eroding the effect of the smaller funds' superior performance on a net return basis.

Grinblatt and Titman (1994), again investigated the same sample of domestically investing mutual funds as in their 1989 study. They used net asset value as one of five independent variables in a cross-sectional regression. They also used two different benchmarks, the coefficient on the net asset value variable is negative but insignificant regardless of the benchmark in use. According to their second study, they found that fund size has thus no effect on performance.

Ciccotello and Grant (1996) investigated a sample of 626 mutual funds in the period of 1992-1996. Their results agreed with those from previous studies on the effect of size on mutual fund performance. They adopted Grinblatt and Titman's (1989) methodological approach and sorted the funds in quintiles based on their net asset value at one specific point in time. At the end of their period of investigation they measured net asset value in order to test the first of their two hypotheses; that large funds should have greater returns than small funds. They also follow Grinblatt and Titman's (1989) methodological approach of measuring fund size at the start of their period of investigation in order to test their second hypothesis; stating that small funds should have greater future returns than large funds. Indeed, as predicted by hypothesis one, large funds outperformed small funds on the basis of past returns. This was in agreement with Becker and Vaughan (2001), who discovered that outperforming funds were able to

attract significantly more money from investors than others. The second hypothesis, relating to a fund's future returns was only partially confirmed by the data. Fund size was found to have no effect on future fund performance except for those funds with an aggressive growth investment objective. The authors denoted this result as being intuitive, because logically the inflow of assets should pose a problem to a fund manager with limited investment choices.

Dermine and Roller (1992) studied French mutual funds for the presence of economies of scale and scope and found an optimal size for a diversified company in the range of 2.9 billion French Francs at that time, suggesting that total asset exceeded this amount leading to the diseconomies of scale and scope.

Within the framework of a pooled cross-sectional/time-series regression, Droms and Walker (1994) relate mutual fund performance to a large set of fund characteristics. Unlike the studies on size and performance previously mentioned, they investigated a sample of international funds available to US investors. They scrutinized 60 coefficients for asset size and were able to obtain a clear cut result: none of the coefficients is significantly different from 0. This led them to conclude that asset size is unrelated to the risk-adjusted returns on mutual funds in the US. Indro et al (1999) did investigations on a sample of 683 actively managed US mutual equity funds over the period 1993-1995. They are the first scholars to come up with the idea that there exists a required minimum size of a mutual fund. If a fund has not reached a minimum net asset volume, the so called break-even size of a fund, the cost of gathering and processing information are too high to be outweighed by returns. Moreover, the authors discovered declining marginal returns to information activities that become negative once a fund has reached a certain net asset volume. The authors attribute these diseconomies of scale to higher transaction costs on large purchases/sale orders, administrative stress, deviations from desired investment style, the opportunity costs of not implementing trades and the lack of the freedom to act without signaling intent. The central argument is that as a mutual fund attracts more and more money from investors, there are less investment opportunities left for him to take advantage of.

Dellva and Olson (1998) in their study discovered that large funds were able to achieve economies of scale and, thus, their expense ratios were lower. Moreover, they also found a negative relationship between performance of funds and the expense ratio. Some studies have reported positive results for the size-performance relationship.

In line with Indro et al (1999), Christopherson et al (2002) concur with the idea that there might exist an inverse relationship between net asset value and performance for small-cap investment managers. Their study contains data on small-cap managers, most of them offering a variety of products, not only mutual funds. The general problems connected with trading stock are, according to the authors, augmented when it comes to moving in and out of small-cap stocks. In tendon with previous studies, the managers are sort into size quintiles. The methodological difference from previous studies lies in Christopherson et al (2002) grouping managers in quintiles in every sub period. By doing so, they control for the fact that well performing managers attract more capital than mediocre ones and are thus able to isolate an uncontaminated size effect. The analysis revealed that indeed there exists an inverse relationship between risk-adjusted performance of a small-cap manager and the level of assets under management and growth in assets under management, respectively. Hence, investors are urged to move out of small-cap investments once they have grown too large.

Gitagia (2013) concluded from his study that fund size and fund performance are negatively correlated so that as fund's assets rise, it is more than likely that the fund manager will be less flexible in taking decisions and will be facing a great deal of bureaucratic inefficiency as do industrial firms. It is inevitable that this would have dire consequences.

Mbataru (2009) investigated the factors influencing the performance of mutual funds in Kenya. Key amongst them was size. She concluded that growth of funds is a critical determinant of performance of mutual funds. She also concluded that as funds grow larger, they tend to become less efficient in their operations.

Otten and Bams(2002) investigated the influence of fund characteristics on risk adjusted performance. They regressed several fund characteristics on the funds' four-factor alphas. They observed a positive effect of size on risk adjusted performance on all countries

investigated which was enough for them to deduce that European mutual funds still have to grow to reach an efficient size. The authors however admit that this finding might have been biased by self-induced correlation.

Using a sample of mutual funds covering the extensive time period 1962-1999, Chen et al (2004) made use of the CAPM as well as the Carhart (1997) four-factor model to test the relation between fund size and performance. Their results revealed a statistically significant inverse relationship between fund size and performance. However, as the authors emphasize, the size effect is only visible while controlling for fund family size. A larger fund family size is associated with higher returns. This effect is attributed to larger fund families being able to realise economies of scale associated with trading commissions and lending fees. Fund family size is positively correlated with fund size and the negative size effect would not be visible without controlling for fund family size. Inspired by the stipulations of the “liquidity hypothesis” stating that net asset volume should affect small cap investments more than others, the authors controlled for the size of the investment target. The results they obtained point to the confirmation of the “liquidity hypothesis”.

While small-cap funds are largely affected by the adverse effect of size on their performance, the performance of large-cap funds is unaffected by the size of their asset base. Another interesting finding of Chen et al (2004) relates to the number of stocks held in the mutual funds’ portfolios. The median fund in the smallest size quintile held about 16 stocks, while the median fund in the largest quintile held about 66 stocks. In connection with the fact that the largest funds are many more than four times bigger than the smallest funds, this means that large funds on average have to take larger positions in individual firms than smaller ones. This lends further support to the unfortunate liquidity concerns for large funds. Recently, Chan et al (2005) present a study on the relation between fund size and the performance of Australian equity managers. Along the lines of previous research, they report a negative influence of fund size on manager performance. While digging deeper towards the origin of these diseconomies of scale, the authors receive results suggesting that high fund inflows exert purchasing pressure on the manager which results in him picking inferior investments and ultimately erodes performance.



Manuel and Moerth(2005) investigated the relationship between hedge fund size and performance and found a negative relationship between fund size and return, except in the case of smaller funds. Larger funds, however, tended to have lower volatilities than smaller funds and similar Sharpe ratios.

Ferreira et al. (2006) checked the determinants of mutual fund performance using four factor models for the funds from 19 countries. The major finding of the study explained that size of the funds did matter and the performance of large funds was better. Furthermore, young funds investing abroad performed better than other funds. The performance of funds charging higher fees and being managed by more experienced individuals was better than others.

Hishamuddin (2006). in a study conducted in the Malaysian Stock Exchange expressed that large companies had higher return and lower risk in comparison with small companies with fewer volume of investment. He concluded that there was a negative relationship between size and unsystematic risk in which, the larger the firm size, the unsystematic risk would be lower.

Elton et al. (2007) found no relationship between fund size and performance whereas Dahlquist et al. (2000) found that smaller equity funds did perform better than larger equity funds. In his master's thesis, Lu (2007) investigated the relationship between firm size and performance. He believed that increase in the size would lead to higher company turnover. Therefore, the cost would be divided to more units and would have a positive effect on the performance of company. Even so, positive and clear evidence in this case was not found. The main reason in this matter was the positive perspective about increasing size of a company and its effect on performance, and its relationship with the economic sphere and reducing transaction costs in a large volume.

Keswani(2010) obtained no significant relationship between fund size and performance variables. There was no conclusive evidence that the fund size affected performance of Balanced Mutual Funds, whether micro, small, medium or large sized funds.

## **2.4 Conclusion**

Various findings from study concerning the fund size and the performance has been reviewed in the previous section. The studies have been arranged chronologically to show the development in research techniques and theories that have changed with time. Some studies report an adverse relationship between size and performance, while others detect no effect at all whereas the others report a favourable relationship. As a result of such findings, the difficulties fund managers face in making decisions as fund size changes is revealed.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter provides the methodology to be used in the research. It will cover the design, population, sampling techniques, instrumentation, data collection, data analysis procedures and hypothesis testing. The chapter looks at the various benchmarks that are used in measuring performance of mutual funds in Kenya.

#### **3.2 Research Design**

The research framework was descriptive one hence a descriptive survey research study was preferred. The descriptive survey design is ideal since it is concerned with making accurate assessment of the statistical inferences, distribution and relationship of the phenomenon (Edwards, 2006). Surveys have the advantage of providing important information for all kinds of public information and research fields such as that desired in this research.

#### **3.3 Population and Sample**

The population of interest in this study was the types of mutual funds in Kenya as at the start the year 2008. There were 33 registered Mutual Funds in Kenya at the end of 2008 under the management of 11 mutual fund managers. To increase the accuracy of data collected in this research, a census survey was adopted. Census refers to data collection about everyone or everything in a group or population and has advantages such as accuracy and detail. Considering that the population is finite and is also small, adoption of sampling less than population would consequently lead to higher probability of error.

#### **3.4 Data Collection**

This research aimed at examining the relationship between mutual fund size and performance in the Kenyan mutual funds. This paper utilized secondary data. Data of financial performance of mutual funds and size was obtained from financial journals, financial statements and the mutual funds' respective websites. Financial performance was evaluated

on periodical returns received in the form of dividends. Data on estimate of performance of mutual was collected on financial performance of mutual funds for the period 2008-2012.

### **3.5 Data Analysis**

Correlation coefficients between fund size and performance was computed to assess the degree of relationship between fund size and performance of mutual funds. The most commonly used correlation statistics is the Pearson Product Moment Correlation coefficient, which measures both the strength and direction of the linear relationship between two variables ( Bryman and Bell, 2007). Analysis of Variance (ANOVA) was conducted to ascertain whether the variance of performance variables among Fixed Income Instruments and Big and Small Cap Stock Mutual Funds is significant at 5% significance level. A significant level of 5% will be applied; which is the most common one in statistical analyses. Null hypothesis was rejected if their significant level became below the 5 % limits; otherwise, it was accepted (Bryman and Bell, 2007). The SPSS software was used for calculating various models to get to proper results.

The main purpose of performance evaluation ratios is generally to compare the return of a managed portfolio in a given time period with the return of a based selected portfolio (George & Wayne, 2006). There are several models which can be used for the performance evaluation of mutual funds; Sharpe measure, Sortino measure, Treynor measure, Jensen Differential measure and Information measure. The Sharpe ratio will however be my model of choice for this research because it is the simplest ratio of performance evaluation based on risk adjusted measures.

#### **3.5.1 Regression Analysis**

The study used multiple linear regression equation and the method of estimation was Ordinary Least Squares (OLS) so as to establish the relationship between fund size and performance. The study used a regression to estimate the model with ROI as the dependent variable and the independent variables as used by Nishat and Mir (2004).

The economic model used in the study is given as:

$$Y = \beta_0 + \beta_1 R_1 + \beta_2 R_2 + \beta_3 R_3 + \epsilon_{it}$$

Where, Y is the dependent variable,  $\beta_0$  is constant  $\beta_1, 2$  and  $3$  is the coefficient of the explanatory variable, and  $\epsilon_{it}$  is the error term assumed to have zero mean and independent across time period. From the economic model in the equation above, equation below will evolve:

$$PERF = \beta_0 + \beta_1 RISK + \beta_2 TCOSTS + \beta_3 FSIZE + \epsilon_{it}$$

Where:

|        |                   |
|--------|-------------------|
| PERF   | Fund Performance  |
| RISK   | Operational Risk  |
| TCOSTS | Transaction Costs |
| FSIZE  | Fund Size         |

### 3.5.2 Pearson's Correlation Coefficient

Pearson's correlation coefficient between two variables is defined as the covariance of the two variables divided by the product of their standard deviations. The form of the definition involves a "product moment", that is, the mean (the first moment about the origin) of the product of the mean-adjusted random variables; hence the modifier product-moment in the name.

Pearson's correlation coefficient when applied to a population is commonly represented by the Greek letter  $\rho$  (rho) and may be referred to as the population correlation coefficient or the population Pearson correlation coefficient. The formula for  $\rho$  is:

$$\rho_{X,Y} = \frac{\text{cov}(X, Y)}{\sigma_X \sigma_Y} = \frac{E[(X - \mu_X)(Y - \mu_Y)]}{\sigma_X \sigma_Y}$$

Where X = Funds' performance as per Sharpe Ratio

Y = Funds' asset base

$\sigma_X$  = Standard deviation of the funds' asset base

$\sigma_Y$  = Standard deviation of the funds' performance determined by Sharpe ratio

### **3.6 Data Validity and Reliability**

In order to check the significance relationship between fund size and performance, correlation coefficients between fund size and performance in the study over the period 2008 to 2012 was computed. A hypothesis was generated. A hypothesis is an explanation for something that has been observed. Types of hypothesis include null hypothesis, alternative hypothesis, and scientific hypothesis. Null and alternative hypotheses are the two types of hypothesis found in statistical hypothesis testing. One is often just the negation of the other. Scientific hypothesis is most commonly known as an educated guess. The following hypothesis testing will be done:

H<sub>0</sub>: There is no significant relationship between fund size and performance of Kenyan mutual funds ( $r=0$ ).

H<sub>1</sub>: There is a significant relationship between fund size and performance of Kenyan mutual funds ( $r\neq 0$ ).

At 95 % level of confidence, the null hypothesis cannot be rejected because the result suggested ( $p > 0.05$ ) no significance relationship between fund size and performance of Kenyan mutual funds. Then, when the significance of the relationship was tested to accept the error limit, the obtained amount was far from the minimum limit of 5%; so, the null hypothesis could not be rejected.

## CHAPTER FOUR

### DATA ANALYSIS AND INTERPRETATION

#### 4.1 Introduction

This chapter presents the data findings on to find how fund size affects the performance of mutual funds in Kenya and consequently their attractiveness as an investment option. . These data was collected from the Nairobi Security Exchange, Capital Market Authority offices and the respective fund managers' websites. Multiple linear regressions were established through Ordinary Least Squares (OLS) so as to establish the relationship between mutual fund size and performance. The study covered a period of 5 years from years 2008 to 2012.

#### 4.2 Data Presentation

##### 4.2.1 Regression Analysis

##### Regression Analysis 2008

**Table 1: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .859 <sup>a</sup> | .738     | .726              | .07833                     |

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.726 an indication that there was variation of 72.6% on fund performance due to changes in operation risks, transactions cost and fund size at 95% confidence interval . This shows that 72.6 % changes in mutual fund performance could be accounted for by changes in operation risks, transactions cost and fund size. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.859.

**Table 2: Coefficients**

| Model |                   | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                   | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)        | .654                        | .155       |                           | 2.939  | .010 |
|       | Operational Risk  | -.560                       | .148       | -.554                     | -3.794 | .001 |
|       | Transaction Costs | -.295                       | .140       | -.308                     | -2.109 | .042 |
|       | Fund Size         | .011                        | .133       | .013                      | .085   | .033 |

The established regression equation was

$$Y = 0.654 - 0.560 X_1 - 0.295 X_2 + 0.011 X_3$$

From the above regression equation it was revealed that holding operation risks, transactions cost and fund size to a constant zero , fund performance would stand at would stand at 0.654 , a unit increase in operation risk would lead to decrease in fund performance by a factors of 0.560, a unit increase in transaction cost would lead to decrease in fund performance by factors of 0.295 and a unit increase in fund size would lead to increase in fund performance by a factor of 0.011. The study further revealed that operation risks, transactions cost and fund size were statistically significant to affect fund performance, as all the p value (sig) were less than 0.05%.

**Regression analysis 2009**

**Table 3: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .901 <sup>a</sup> | .811     | .798              | .88195                     |

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.798 an indication that there was variation of 79.8% on fund performance due to changes in operation risks, transactions cost and fund size at 95% confidence interval . This shows that 79.8 % changes in fund performance could be accounted for by changes in operation risks, transactions cost and fund size, and type of fund.



R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.901.

**Table 4: Coefficients**

| Model |                   | Unstandardized |            | Standardized | t      | Sig. |
|-------|-------------------|----------------|------------|--------------|--------|------|
|       |                   | Coefficients   |            | Coefficients |        |      |
|       |                   | B              | Std. Error | Beta         |        |      |
| 1     | (Constant)        | .510           | .440       |              | 1.209  | .000 |
|       | Operational Risk  | -.226          | .129       | -.026        | -.205  | .018 |
|       | Transaction Costs | -.125          | .112       | -.152        | -1.121 | .026 |
|       | Fund Size         | .247           | .125       | .262         | 1.971  | .043 |

The established regression equation was

$$Y = 0.510 - 0.226 X_1 - 0.125 X_2 + 0.247X_3$$

From the above regression equation it was revealed that holding operation risks, transactions cost and fund size, type of fund to a constant zero , fund performance would stand at would stand at 0.510 , a unit increase in operation risk would lead to decrease in fund performance by a factors of 0.226, a unit increase in transaction cost would lead to decrease in fund performance by factors of 0.125 , unit increase in fund size would lead to increase in fund performance by a factor of 0.247. The study further revealed that operation risks, transactions cost and fund size were statistically significant to affect fund performance, as all the p value (sig) were less than 0.05%.

## Regression Analysis 2010

**Table 5: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .947 <sup>a</sup> | .897     | .853              | .45277                     |

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.853 an indication that there was variation of 85.3% on fund performance due to changes in operation risks, transactions cost and fund size at 95% confidence interval . This shows that 85.3 % changes in fund performance could be accounted for by hanges in operation risks, transactions cost and fund size. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.947.

**Table 6: Coefficients**

| Model |                   | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|-------|------|
|       |                   | B                           | Std. Error | Beta                      |       |      |
| 1     | (Constant)        | .706                        | .345       |                           | 4.941 | .000 |
|       | Operational Risk  | -.269                       | .132       | -.101                     | -.523 | .004 |
|       | Transaction Costs | -.256                       | .182       | -.062                     | -.310 | .018 |
|       | Fund Size         | .092                        | .147       | .117                      | .626  | .036 |

The established regression equation was

$$Y = 0.706 - 0.269 X_1 - 0.256 X_2 + 0.092X_3$$

From the above regression equation it was revealed that holding operation risks, transactions cost and fund size to a constant zero , fund performance would stand at would stand at 0.706 , a unit increase in operation risk would lead to decrease in fund performance by a factors of 0.269, a unit increase in transaction cost would lead to decrease in fund performance by factors of 0.256 and a unit increase in fund size would lead to increase in fund performance by a factor of 0.092. The study further revealed that operation risks, transactions cost and

fund size were statistically significant to affect fund performance, as all the p value (sig) were less than 0.05%.

## Regression Analysis 2011

**Table 7: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .874 <sup>a</sup> | .834     | .815              | .12225                     |

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.815 an indication that there was variation of 81.5% on fund performance due to changes in operation risks, transactions cost and fund size at 95% confidence interval . This shows that 81.5 % changes in fund performance could be accounted for by changes in operation risks, transactions cost and fund size. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.874.

**Table 8: Coefficients**

| Model |                   | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                   | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)        | .878                        | .357       |                           | 2.459  | .016 |
|       | Operational Risk  | -.305                       | .097       | -.402                     | -3.145 | .002 |
|       | Transaction Costs | -.071                       | .093       | -.091                     | -.760  | .049 |
|       | Fund Size         | .158                        | .100       | .183                      | 1.583  | .017 |
|       | Type of Fund      | .245                        | .147       | .182                      | 1.664  | .010 |

The established regression equation was

$$Y = 0.878 - 0.305 X_1 - 0.071 X_2 + 0.158 X_3$$

From the above regression equation it was revealed that holding operation risks, transactions cost, fund size, type of fund, organization structure and country characteristic to a constant

zero , fund performance would stand at would stand at 0.878 , a unit increase in operation risk would lead to decrease in fund performance by a factors of 0.305, a unit increase in transaction cost would lead to decrease in fund performance by factors of 0.071 and a unit increase in fund size would lead to increase in fund performance by a factor of 0.158. The study further revealed that operation risks, transactions cost and fund size were statistically significant to affect fund performance, as all the p value (sig) were less than 0.05%.

## Regression Analysis 2012

**Table 9: Model Summary**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .928 <sup>a</sup> | .861     | .836              | .70617                     |

Adjusted R squared is coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable, from the findings in the above table the value of adjusted R squared was 0.836 an indication that there was variation of 83.6% on fund performance due to changes in operation risks, transactions cost and fund size at 95% confidence interval . This shows that 83.6 % changes in fund performance could be accounted for by changes in operation risks, transactions cost and fund size. R is the correlation coefficient which shows the relationship between the study variables, from the findings shown in the table above there was a strong positive relationship between the study variables as shown by 0.928.

**Table 10: Coefficients**

| Model |                   | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                   | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)        | .570                        | .271       |                           | .9940  | .000 |
|       | Operational Risk  | -.350                       | .107       | -.327                     | -3.276 | .002 |
|       | Transaction Costs | -.093                       | .154       | -.075                     | -.603  | .048 |
|       | Fund Size         | .192                        | .108       | .218                      | 1.788  | .077 |
|       | Type of Fund      | .116                        | .094       | .132                      | 1.228  | .023 |

The established regression equation was

$$Y = 0.570 - 0.350 X_1 - 0.093 X_2 + 0.192X_3$$

From the above regression equation it was revealed that holding operation risks, transactions cost and fund size to a constant zero, fund performance would stand at would stand at 0.570, a unit increase in operation risk would lead to decrease in fund performance by a factors of 0.350, a unit increase in transaction cost would lead to decrease in fund performance by factors of 0.093 and a unit increase in fund size would lead to increase in fund performance by a factor of 0.192. The study further revealed that operation risks, transactions cost and fund size were statistically significant to affect fund performance, as all the p value (sig) were less than 0.05%.

#### 4.2.2 Correlation Analysis

**Table 11: Correlations coefficient**

|       |                     | ROI   | Risk  | Tcost | Size |
|-------|---------------------|-------|-------|-------|------|
| ROI   | Pearson Correlation | 1     | -.764 | -.634 | .872 |
|       | Sig. (2-tailed)     |       | .302  | .926  | .634 |
|       | N                   | 11    | 11    | 11    | 11   |
| Risk  | Pearson Correlation | .764  | 1     | .594  | .148 |
|       | Sig. (2-tailed)     | .302  |       | .070  | .683 |
|       | N                   | 11    | 11    | 11    | 11   |
| Tcost | Pearson Correlation | -.634 | .594  | 1     | .361 |
|       | Sig. (2-tailed)     | .926  | .070  |       | .305 |
|       | N                   | 11    | 11    | 11    | 11   |
| Size  | Pearson Correlation | .872  | .148  | .361  | 1    |
|       | Sig. (2-tailed)     | .634  | .683  | .305  |      |
|       | N                   | 11    | 11    | 11    | 11   |

On the correlation of the study variables, the researcher conducted a Pearson Product Moment correlation. From the findings on the correlation analysis between Return On Investment and fund transaction cost , fund size and fund operation risk , the study found that there was positive correlation coefficient between Return On Investment and fund size as

shown by correlation factor of 0.872, the study also found a negative correlation between fund performance and operation risk as shown by correlation coefficient of 0.764, association between fund performance and transaction cost was found to have negative relationship as shown by correlation coefficient of 0.634.

### 4.2.3 ANOVA Analysis

**Table 12: ANOVA<sup>a</sup>**

| Model |            | Sum of Squares | df | Mean Square | F     | Sig.              |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1     | Regression | 0.002          | 2  | .001        | 3.869 | .015 <sup>b</sup> |
|       | Residual   | 1.092          | 52 | .021        |       |                   |
|       | Total      | 1.094          | 54 |             |       |                   |

From the ANOVA statistics in table above, the processed data, which is the population parameters, had a significance level of 0.015 which shows that the data is ideal for making a conclusion on the population's parameter as the value of significance (p-value ) is less than 5%. The calculated was greater than the critical value ( $2.0049 < 3.869$ ) an indication that transaction cost , operation risk and fund size were significantly affecting the mutual performance in Kenya .The significance value was less than 0.05 an indication that the model was statistically significant.

### 4.3 Summary and Interpretation of Findings

The findings of the study revealed that fund performance is highly dynamic. Such changes could be accounted for by changes in operation risks, transactions cost and fund size. It is for this reason that multiple linear regression analysis and the method of estimation of Ordinary Least Squares was the best model to achieve this. Operational risks, transactions cost and fund size were compared simultanously to changes in fund performance.

The study also found that there was a positive relationship between fund performance and fund size. Fund size refers to the net asset value of the funds. Mutual funds are customarily categorized as either large or small funds. Large funds offer challenges to investors as they create larger investment portfolios. However, from my study, these large funds also perform

better than the smaller funds.

From the regression analysis the study found that there was negative relationship between fund performance and transactions cost. Transaction costs considerations are of utmost importance if any value were to be considered in any investment. Transaction costs incurred by mutual fund managers in Kenya include the fees and expenses paid for mutual funds, the investment management costs paid by institutions, and the transaction costs paid by all traders.

The study also found that there was negative relationship between fund performance and operation risks. That is, the risk of a security is the variability in its expected future returns. High risk securities have high dispersion around the mean while low risk securities will have a low dispersion around the mean. Risk as measured as the variability of returns has received widespread acknowledgement in decision theory. Thus, risk viewed as the variability of returns is quantified in terms of variability measures which include range, mean absolute deviation, variance, standard deviation, and coefficients of variation.

My findings are consistent with those of Hishamuddin (2006), who in a study conducted in the Malaysian Stock Exchange, expressed that large companies had higher return and lower risk in comparison with small companies with fewer volume of investment. My findings also supported the study conducted by Ferreira et al. (2006) who checked the determinants of mutual fund performance using four factor models for the funds from 19 countries. The major finding of his study explained that size of the funds did matter and the performance of large funds was better.

However, my findings were in contrast to those from the study conducted by Indro et al. (1999) and Christopherson et al. (2002) who conjectured that there exists an inverse relationship between net asset value and performance for small-cap investment managers. My findings are also with Reilly & Brown (2003) who observed that risk cannot be ignored in any investment venture. It is perceived as the variation in the distribution of possible outcomes, their likelihoods and their subjective returns. Gitari (1990) states that risk

considerations are at the very heart of most investment decisions; different perspectives on risk give rise to different schools of thought. The variability school, March and Shapira (1987) perceive risk as the variation in the distribution of possible outcomes, their likelihoods and their subjective values.



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Summary**

Mutual funds face competition from various alternatives, when fund performance is generally not impressive. Studies done on mutual fund performance have reported that most funds did not match performance of comparable market indexes.

The study sought to find out how fund size affects the performance of mutual funds in Kenya and consequently their attractiveness as an investment option. The study entailed a census of all the mutual funds operating in Kenya with equity portfolios licensed by the Capital Markets Authority. Secondary data was collected from the Nairobi Security Exchange and Capital Market Authority offices.

Multiple regressions were established through Ordinary Least Squares (OLS) so as to establish the relationship between fund size and performance. The study covered a period of 5 years from years 2008 to 2012. From the findings on the regression analysis, the study revealed that there was negative relationship between fund performance, operation risks and transactions cost. The study also found that there was a positive relationship between fund performance and fund size. The study recommends that there is need for the management of mutual funds to mitigate operation risk involved in the mutual fund investment.

There is need for the organization involved in the management of mutual funds in Kenya to have solid organization structure as it was found that organization structure affects how information is processed through an organization which in turn affects fund performance of any investment.

## **5.2 Conclusions**

The purpose of this study was to analyze the level of correlation between fund size and performance of Kenyan mutual funds. To meet this purpose, the conclusion is drawn and the research questions are answered in the following way. What is the relationship between fund size and performance of mutual funds?

Regression analysis, Correlation analysis and ANOVA analysis was used to examine the relationship between fund size and performance. The study revealed a positive relationship between fund performance and fund size. The study found that operation risks, transactions cost and fund size were statistically significant to affecting mutual fund performance in Kenya.

The study found that risk in the management of mutual funds cannot be ignored in any investment venture. The risk of a security is the variability in its expected future returns. High risk securities have high dispersion around the mean while low risk securities will have a low dispersion around the mean. Risk as measured as the variability of returns has received widespread acknowledgement in decision theory. Thus, risk viewed as the variability of returns is quantified in terms of variability measures which include range, mean absolute deviation, variance, standard deviation, and coefficients of variation.

## **5.3 Policy Recommendations**

The study recommends that there is need for the management of mutual funds to mitigate operation risk involved in the mutual fund investment as it was found that high risk securities have high dispersion around the mean while low risk securities will have a low dispersion around the mean.

There is need to reduce the transaction cost involved in the mutual funds acquisition, as it was found that increase in transaction cost negatively affects the performance of mutual funds in Kenya. There is need for the government to designing policies that will stimulate economic growth in the country as it was found that country characteristic like economic growth have positive relationship with fund performance.

There is need for capital market authority to develop better regulatory framework that will facilitate and enhance the trading of mutual funds in the country as this will have positive impact on the performance of mutual funds in the country as it was found that there is a positive relation between mutual fund performance and the country's level of financial development, in particular in countries with high trading activity and low transaction costs.

There is need to increase the amount of mutual fund size in the country, increase in fund size in the country will have positive impact on the performance of funds, as it was found that fund performance and fund size have a positive significant relationship. There is need for Capital Market Authority to have legislation that will enable increase in the number of fund that are traded in the capital market as this will lead to increase in fund performance as it was found that an increase in fund type will lead to increase in the fund performance.

#### **5.4 Limitations of the Study**

In attaining its objective, the study was limited to mutual fund companies in Kenya. Secondary data was collected from the firms' financial reports. The study was thus limited to the inherent limitations of secondary data provided by the firms' financial statements. The study was thus limited to the degree of precision of the data obtained from the secondary source. While the data was verifiable since it came from the Nairobi Securities Exchange publications, it nonetheless could still be prone to these shortcomings.

There are numerous factors that affect the performance of mutual funds. In addition, these factors affect the performance of mutual funds in Kenya simultaneously. It is also likely that these factors also affect each other. However my study was limited to only size and its effects on the performance of mutual funds.

In the period between 2008 and 2012, there were additional mutual fund managers registered. In the year 2008, there were 11 registered mutual fund managers but the number grew to 16 at the end of the year 2012. Consideration of the fund managers in their year of registration would not likely give a true picture of the effect of size on their performance. This

consequently means that my study was limited to the mutual fund managers registered in Kenya as at end of the year 2008.

The study was limited to duration of five years from the year 2008 to 2012. A longer duration of the study would have captured periods of various economic significances such as booms and recessions. This would have distorted any trends or patterns of the relationship between size and performance of mutual funds and consequently clouded any conclusions reached.

### **5.5 Suggestions for Further Research**

A study can be designed to find out the impact of country economic growth on the fund performance. This will give an indication on the effects of country economic growth on fund performance.

From the findings and conclusion, the study recommends an in-depth study to be carried out on the relationship between investors education and fund performance in Kenya. This will help to allow more insight on the impact of investor's education on fund performance.

It would be important to carry out a study with a bias to determining the relationship between market development and fund performance. This will assist more knowledge on the strength of impact of market development on fund performance.

In order to better understand the effects of legislation on fund performance, it would be interesting to carry out a study to determine effects of fund legislation on the performance of mutual fund in Kenya.

## REFERENCES

- Alp, M.(2009). Mutual Funds: An Influential Review of Studies in Performance, Persistence, Investment Styles, Managerial Skills, Fund Characteristics and Behavioral Pattern. *Working paper, School of Management, University of St Andrews*,37-53.
- Bird, R., Chin, H., & McCrae, M. (1983). The Performance of Australian Superannuation Funds Vol. 8, No.1. *Australian Journal of Management* , 49-69.
- Bryman, A., & Bell, E. (2007).*Business research methods.2nd edition. New York :Oxford University Press Inc.*
- Carhart, M. M. (1997). On Persistence in Mutual Fund Performance. *Journal of Finance*, 52(1), 57-82.
- Chan, H. W. H., Faff, R., Gallagher, D. R., & Looi, A. (2005).Fund Size, Fund Flow, Transaction Costs and Performance: Size Matters! *Working paper. The University of new South Wales, Sydney.*
- Chen, J., Hong, H., Huang, M. & Kubick, J. D. (2004). Does Fund Size Erode Mutual Fund Performance? The Role of Liquidity and Organization. *American Economic Review*, 44, 1276-1302.
- Ciccotello, C. & Grant, C. (1996). Equity Fund Size and Growth: Implications for Performance and Selection. *Financial Services Review*, 5, 1-12.
- Christopherson, J., Ding, Z. & Greenwood, P. (2002).The Perils of Success. *Journal of Portfolio Management*, 28, 41-45.
- Cole, D (2000). *Mutual Funds: How Mutual Funds Earn Money*.Retrieved June 4, 2013, from [http://www.davidcole.net/mutual\\_funds/money.html](http://www.davidcole.net/mutual_funds/money.html)

Dahlquist, M., Engström, S. and Söderlind, P. (2000). Performance and Characteristics of Swedish Mutual Funds. *Journal of Financial and Quantitative Analysis*, Vol. 35(3), pp. 409-423.

Dellva, W. L., & Olson, G. T. (1998). The relationship between mutual fund fees and expenses and their effects on performance. *Financial Review*, 33(1), 85-104.

Dermine, J., & Roller, L. H. (1992). Economies of scale and scope in French mutual funds. *Journal of Financial Intermediation*, 2(1), 83-93.

Droms, W. & Walker, D. (1994). Investment Performance of International Mutual Funds. *Journal of Financial Research*, 27, 1-14.

Elton, E. J., Gruber, M. J., Brown, S. J. and Goetzmann, W. N. (2007). *Modern Portfolio Theory and Investment Analysis (7th Ed.)*. John Wiley & Sons: New York.

European Fund and Asset Management Association (2008). *The European Fund Classification. June 2008. [Brochure]. EU: EFAMA*

Fama, E. and French, K. (1992). The cross-section of expected stock returns, *Journal of Finance* 47, 427-465.

Ferreira, M., Miguel, A., & Romas, S. (2006). The Determinants of Mutual Fund Performance: A Cross-Country Study. *Spectrum*, Vol 28, pp 47-68.

Ferruz, L., Munoz, F., and Vargas, M., 2009, "Does the size of a fund family matter when choosing an investment strategy? Evidence from Spain ", *Review of Quantitative Finance and Accounting*, Published online – 4th February, 2009

George A. & E.Ferson, Wayne, 2006. Portfolio Performance Evaluation, Foundations and Trends in Finance. 2(2): 83-190.

Gitagia, F. (2013). Fundamentals That Predict Mutual Fund Performance: A case of fund managers in Kenya, *Master Thesis on MBA Accounting and Finance, Kenyatta University*.

Gohar, R., Ahmed, S., & Niazi, U. (2011). Performance comparison of mutual funds in Pakistan. *Journal of Business Management Vol. 5(14)* , 5583-5593.

Gorman, L. (1991), A Study of the Relationship between Mutual Fund Return and Asset Size, 1974-1987. *Akron Business and Economic Review, Vol. 22, No. 4*, 53-61.

Grinblatt, M., & Titman, S. (1989). Mutual Fund Performance: An Analysis of Quarterly Portfolio Holdings. *The Journal of Business, Vol. 62, No3.* , 393-416.

Hishamuddin, A., (2006). Size Effect on the Performance of Listed Real Estate Companies, International Real Estate Research Symposium (IRERS) 2006 11 – 13th April 2006, PWTC, Kuala Lumpur, Malaysia.

Howells, P., & Bain, K. (2005). The economics of money, banking and finance: a European text. 3rd ed. *Harlow: Pearson Education*.

Ianthe, J. D. (2005). Sharpe Point: Risk Gauge Is Misused. *New York. Wall Street Journal*.

Indro, D., Jiang, C., Hu, M. & Lee, W. (1999). Mutual Fund Performance: Does Fund Size Matter? *Financial Analysts Journal*

Jensen, M. C. (1968). The Performance of Mutual Funds in the period 1945-1964. *Journal of Finance, 32(2)*, 389-416.

Jensen, M. C. (1972). Capital and Markets: Theory and Evidence. *The Bell Journal of Economics and Management Science, 3(2)*, 357-398.

Kagendo, C. (2009). Factors affecting the performance of Unit trust funds in Kenya, *Master Thesis on MBA Finance and Accounting, University of Nairobi*.

Kagunda, T. (2011). Asset allocation by fund managers and the financial performance of Mutual Funds in Kenya, *Master Thesis on MBA Finance and Accounting, University of Nairobi*.

Keswani, s. (2011).Effect of Fund Size on the Performance of Balanced Mutual Funds an Empirical Studying Indian Context. *International Journal of Multidisciplinary Research Vol.1 Issue 4*.

Khorona, A., Servaes, H. & Tufano, P. (2006). Mutual Fund Fees Around the World. *Working Paper*. Georgia Institute of Technology.

Kolosov, P., & Soltanmammedov, S. (2011).Board Structure in Swedish Mutual Funds Industry. *Master thesis Umeå School of Busines*,21.

Lalith, S. and TanweerH., (2005).Portfolio Performance Evaluation, Springer, pp: 617-622.

Lin, C.-Y., Hsu, Y.-C., & Kao, M.-C.(2011).An application of logistic regression to find outstanding fund managers. *African Journal of Business Management Vol.5 (8)*, pp. 3076 3081.

Lindeen, E., & Gros, J. (2009).Does Size Affect Performance? Study of Size-Driven Effects on Performance in Swedish Equity Mutual Funds. *Master Thesis in Finance Stockholm School of Economics*.

Lu D (2007). An Empirical Study of Mutual Fund Performance and its Relation with Fund Size, *Master Thesis on MBA Finance and Investment, University of Nottingham*.



Manuel, A., & Moerth, P. (2005). Impact of Fund Size on Hedge Fund Performance. *Journal of Asset Management* 6.3, 219-238.

Mbataru, C. (2009). Factors affecting the performance of Unit Trust Funds in Kenya, *Master Thesis on MBA School of Business, University of Nairobi*.

Nafees, B., Amir Shah, S. M., & Khan, S. (2011). Performance evaluation of open end and close end mutual funds in Pakistan. *African Journal of Business Management*, pp. 11425-11434.

Otten, R., & Bams, D. (2002). European Mutual Fund Performance. *European Financial Management*, Vol. 8, No. 1, 75-101.

Rahdari, M. (2009). Evaluation of Long Term Portfolio's' Performance, *Bimaquest- Vol. IX (I)*.

Rouwenhorst, K. (2004). The origins of mutual funds. *Yale School of Management Working Papers*.

Shahid, M., 2007. Measuring portfolio performance U.U.D.M., *Department of Mathematics Uppsala University, Project Report*.

Sharpe, W., (1966), Mutual Fund Performance. *Journal of Business*. Vol. 39.

Sharpe, W.F, (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *J. Finance* 19.

Tehrani, R., Ahmadiania, H., & Hasbaei, A. (2011). Analyzing performance of investment companies listed the Tehran stock exchange by selected ratios and measures. *African Journal of Business Management* Vol. 5(17), pp. 7428-7439

[www.investopedia.com/articles/mutualfund/05/mfhistory.asp](http://www.investopedia.com/articles/mutualfund/05/mfhistory.asp).

[www.cma.or.ke](http://www.cma.or.ke)

## APPENDICES

### Appendix I: Registered Mutual Funds in Kenya as at Dec 31<sup>st</sup> 2008

| Fund Asset Managers                            | Type of Fund(s) Managed  |
|--|--|
| African Alliance Kenya Investment Bank Limited | <ol style="list-style-type: none"> <li>1. Money Market Fund</li> <li>2. Fixed Income</li> <li>3. Managed Fund</li> <li>4. Equity Fund</li> </ol>                                     |
| Amana Capital Limited                          | <ol style="list-style-type: none"> <li>1. Balanced Fund</li> <li>2. Growth Fund</li> </ol>   |
| British-American Asset Managers Limited        | <ol style="list-style-type: none"> <li>1. Money Market Fund</li> <li>2. Income Fund</li> <li>3. Balanced Fund</li> <li>4. Managed Retirement Fund</li> <li>5. Equity Fund</li> </ol> |
| CO-OP Trust Investment Services Limited        | <ol style="list-style-type: none"> <li>1. Fixed Income</li> <li>2. Equity Fund</li> <li>3. Balanced Fund</li> <li>4. Managed Retirement Fund</li> </ol>                              |
| Genesis Kenya Investment Management Limited    | <ol style="list-style-type: none"> <li>1. Managed Retirement Fund</li> <li>2. Equity Fund</li> </ol>   |
| ICEA Unit Trust Scheme *                       | <ol style="list-style-type: none"> <li>1. Money Market Fund</li> <li>2. Equity Fund</li> <li>3. Growth Fund</li> </ol>   |
| Kenindia Asset Management Company Limited      | <ol style="list-style-type: none"> <li>1. Managed Retirement Fund</li> </ol>   |
| Madison Asset Management Services Limited      | <ol style="list-style-type: none"> <li>2. Managed Retirement Fund</li> <li>3. Equity Fund</li> </ol>   |

|  |  |
|--|--|
|  | <ul style="list-style-type: none"> <li>4. Balanced Fund</li> <li>5. Money Market Fund</li> </ul>                         |
| Old Mutual Asset Managers (Kenya) Limited  | <ul style="list-style-type: none"> <li>1. Equity Fund</li> <li>2. Money Market Fund</li> <li>3. Balanced Fund</li> </ul> |
| Sanlam Investment Management Kenya Limited | <ul style="list-style-type: none"> <li>1. Balanced Fund</li> <li>2. Equity Fund</li> <li>3. Money Market Fund</li> </ul> |
| Zimele Asset Management Company Limited    | <ul style="list-style-type: none"> <li>1. Balanced Fund</li> <li>2. Money Market Fund</li> </ul>                         |

## Appendix II: Summary of Data

### Table of Year 2008

| company  | ROA      | Risk     | T cost   | Size     |
|--|----------|----------|----------|----------|
| African Alliance Kenya Investment Bank Limited | 0.900353 | 0.095705 | 3.342246 | 0.09124  |
| Amana Capital Limited                          | 0.958714 | 0.056571 | 5.386959 | 0.123564 |
| British-American Asset Managers Limited        | 0.670409 | 0.005692 | 1.773464 | 0.071546 |
| CO-OP Trust Investment Services Limited        | 0.940378 | 0.012979 | 2.139984 | 0.10087  |
| Genesis Kenya Investment Management Limited    | 0.945457 | 0.034694 | 9.670245 | 0.049319 |
| ICEA Unit Trust Scheme                         | 0.973962 | 0.006193 | 21.61965 | 0.21746  |
| Kenindia Asset Management Company Limited      | 0.970137 | 0.07172  | 7.309792 | 0.235803 |
| Madison Asset Management Services Limited      | 0.942705 | 0.144916 | 9.349846 | 0.081225 |
| Old Mutual Asset Managers (Kenya) Limited      | 0.939562 | 0.033398 | 6.31669  | 0.09117  |
| Sanlam Investment Management Kenya Limited     | 0.823006 | 0.027567 | 2.896913 | 0.195681 |
| Zimele Asset Management Company Limited        | 0.621852 | 0.03485  | 1.517879 | 0.224603 |

### Table Year 2009

| Company  | ROI      | Risk     | T cost   | Size   |
|--|----------|----------|----------|--------|
| African Alliance Kenya Investment Bank Limited | 0.908792 | 0.048313 | 2.337446 | 0.0193 |
| Amana Capital Limited                          | 0.957315 | 0.067307 | 2.775758 | 0.0284 |
| British-American Asset Managers Limited        | 0.63955  | 0.05968  | 4.544364 | 0.0454 |
| CO-OP Trust Investment Services Limited        | 0.950386 | 0.068865 | 4.959553 | 0.0304 |
| Genesis Kenya Investment Management Limited    | 0.922151 | 0.0826   | 6.136452 | 0.2139 |
| ICEA Unit Trust Scheme                         | 0.968927 | 0.01333  | 15.17711 | 0.9525 |

|  |          |          |          |          |
|--|----------|----------|----------|----------|
| Kenindia Asset Management Company Limited  | 0.966551 | 0.263493 | 2.307154 | 0.6321   |
| Madison Asset Management Services Limited  | 0.93364  | 0.019164 | 5.172941 | 0.9447   |
| Old Mutual Asset Managers (Kenya) Limited  | 0.932634 | 0.006841 | 1.753104 | 0.9040   |
| Sanlam Investment Management Kenya Limited | 0.713293 | 0.06406  | 2.270086 | 0.965564 |
| Zimele Asset Management Company Limited    | 0.921518 | 0.209569 | 1.59363  | 0.948507 |

### Table of Year 2010

| Company  | ROI      | Risk     | T cost   | Size     |
|--|----------|----------|----------|----------|
| African Alliance Kenya Investment Bank Limited | 0.899828 | 0.1832   | 2.54636  | 0.113886 |
| Amana Capital Limited                          | 0.952508 | 0.7711   | 1.43979  | 0.143826 |
| British-American Asset Managers Limited        | 0.632141 | 0.8562   | 2.035905 | 0.018489 |
| CO-OP Trust Investment Services Limited        | 0.944798 | 0.34831  | 1.9541   | 0.12605  |
| Genesis Kenya Investment Management Limited    | 0.904043 | 0.37552  | 1.078856 | 0.094291 |
| ICEA Unit Trust Scheme                         | 0.96556  | 0.16787  | 4.076334 | 0.077309 |
| Kenindia Asset Management Company Limited      | 0.94850  | 0.30958  | 2.631956 | 0.033694 |
| Madison Asset Management Services Limited      | 0.92722  | 0.23606  | 3.581474 | 0.271522 |
| Old Mutual Asset Managers (Kenya) Limited      | 0.91946  | 0.005557 | 1.59363  | 0.187437 |
| Sanlam Investment Management Kenya Limited     | 0.62280  | 0.01343  | 2.54636  | 0.091045 |
| Zimele Asset Management Company Limited        | 0.68262  | 0.54889  | 1.43979  | 0.137777 |

### Table Year 2011

| Company  | ROI      | Risk     | T cost   | Size     |
|--|----------|----------|----------|----------|
| African Alliance Kenya Investment Bank Limited | 0.905142 | 0.042533 | 2.035905 | 0.027113 |
| Amana Capital Limited                          | 0.95432  | 0.001951 | 1.9541   | 0.113886 |

|   |          |          |          |          |
|---|----------|----------|----------|----------|
| British-American Asset Managers Limited     | 0.626217 | 0.070529 | 1.078856 | 0.143826 |
| CO-OP Trust Investment Services Limited     | 0.952716 | 0.23911  | 4.076334 | 0.018489 |
| Genesis Kenya Investment Management Limited | 0.849821 | 0.001189 | 4.274013 | 0.348788 |
| ICEA Unit Trust Scheme                      | 0.961484 | 0.04787  | 3.086563 | 0.03485  |
| Kenindia Asset Management Company Limited   | 0.921518 | 0.209569 | 1.69728  | 0.027567 |
| Madison Asset Management Services Limited   | 0.924888 | 0.002313 | 2.159961 | 0.035618 |
| Old Mutual Asset Managers (Kenya) Limited   | 0.933939 | 0.090534 | 4.576526 | 0.115034 |
| Sanlam Investment Management Kenya Limited  | 0.620553 | 0.130211 | 2.78161  | 0.017637 |
| Zimele Asset Management Company Limited     | 0.707747 | 0.016518 | 1.077616 | 0.035034 |

### Table of Year 2012

| <b>company</b>                                 | <b>ROI</b> | <b>Risk</b> | <b>Tcost</b> | <b>Size</b> |
|--|------------|-------------|--------------|-------------|
| African Alliance Kenya Investment Bank Limited | 0.492176   | 0.105705    | 2.209439     | 0.0826      |
| Amana Capital Limited                          | 0.450059   | 0.156570    | 2.270086     | 0.01333     |
| British-American Asset Managers Limited        | 0.316384   | 0.105691    | 1.59363      | 0.26349     |
| CO-OP Trust Investment Services Limited        | 0.206723   | 0.002372    | 2.54636      | 0.01916     |
| Genesis Kenya Investment Management Limited    | 0.588185   | 0.134693    | 1.43979      | 0.00684     |
| ICEA Unit Trust Scheme                         | 0.594400   | 0.016193    | 2.035905     | 0.06406     |
| Kenindia Asset Management Company Limited      | 1.420712   | 0.413023    | 1.9541       | 0.16866     |
| Madison Asset Management Services Limited      | 0.560240   | 0.134916    | 4.085789     | 0.23878     |
| Old Mutual Asset Managers (Kenya) Limited      | 0.482410   | 0.134397    | 1.19208      | 0.07168     |

|  |          |          |          |         |
|--|----------|----------|----------|---------|
| Sanlam Investment Management Kenya Limited | 0.799165 | 0.354788 | 4.457944 | 0.07154 |
| Zimele Asset Management Company Limited    | 0.557543 | 0.044849 | 1.853158 | 0.10087 |