

**EFFECT OF FUND SPECIFIC FACTORS ON RETURNS OF UNIT  
TRUST FUNDS LICENSED BY CAPITAL MARKET AUTHORITY  
OF KENYA**

**SAMUEL KIPKIRUI MUTAI**

**A PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS OF THE AWARD OF MASTERS OF SCIENCE IN  
FINANCE AND INVESTMENT IN SCHOOL OF BUSINESS OF THE  
UNIVERSITY OF NAIROBI**

**2019**

## **DECLARATION**

This project is my original work and has not been presented for a degree in any other university.

Signed..... Date.....

**SAMUEL KIPKIRUI MUTAI**

**D63/6388/2017**

This project has been submitted for examination with my approval as university supervisor.

Signed..... Date.....

**MR. JOSEPH BARASA**

**DEPARTMENT OF FINANCE AND ACCOUNTING**

## **ACKNOWLEDGEMENT**

My special gratitude first goes to Almighty God for giving me the strength and wisdom to complete this process. I am also thankful to my supervisor, Mr. Joseph Barasa for his patience and guidance throughout this project. Special thanks to my lecturers for having given their best to impart knowledge, my classmates for team work, my friends for helping hand when they were call for.

## **DEDICATION**

To my loving wife, Joyce Chelangat Mutai and our children, Collins Kirui, Ian Kipkemoi and Ashley Chepchumba.

•

## **LIST OF ABBREVIATION AND ACRONYMS**

ADF	:	Augmented Dicky Fuller
CAPM	:	Capital Asset Pricing Model
CMA	:	Capital Market Authority
EMH	:	Efficient Market Hypotheses
Ln	:	Natural Logarithm
MPT	:	Modern Portfolio Theory
NASI	:	Nairobi All share Index
NSE	:	Nairobi Securities Exchange
OLS	:	Ordinary Least Squares
PCSEs	:	Panels Corrected Standard Errors
ROA	:	Return on Assets
ROE	:	Return on Equity
SD	:	Standard Deviation
VIF	:	Variance Inflation Factor

# TABLE CONTENTS

<b>DECLARATION.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>iii</b>
<b>DEDICATION.....</b>	<b>iv</b>
<b>LIST OF ABBREVIATION AND ACRONYMS .....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>ix</b>
<b>LIST OF FIGURES .....</b>	<b>x</b>
<b>ABSTRACT.....</b>	<b>xi</b>
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1. Background of the study .....	1
1.1.1 Fund Specific Factors .....	2
1.1.2 Returns on Unit Trust Funds .....	3
1.1.3 Fund Specific Factors and Returns of Unit Trusts Funds.....	4
1.1.4 Unit Trust Funds in Kenya .....	5
1.2 Statement of the Problem .....	6
1.3 Research Objectives .....	8
1.4 Value of the Study.....	8
<b>CHAPTER TWO: LITERATURE REVIEW .....</b>	<b>10</b>
2.1 Introduction .....	10
2.2 Theoretical Foundation .....	10
2.2.1 Efficient Markets Hypothesis (EMH).....	10
2.2.2 Modern Portfolio theory (MPT) .....	11
2.2.3 Capital Asset Pricing Model.....	13
2.3 Determinants of Returns of Unit Trust Funds.....	14
2.3.1 Fund Size .....	14
2.3.2 Fund Age .....	15
2.3.3 Fund Risk.....	15

2.3.4 Fund Cost.....	16
2.4 Empirical Review .....	16
2.5 Summary of Literature .....	19
2.6 Conceptual Framework .....	20
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>21</b>
3.1 Introduction .....	21
3.2 Research Design.....	21
3.3 Target Population .....	21
3.4 Data Collection.....	21
3.5 Diagnostic Test.....	22
3.5.1 Normality Test.....	22
3.5.2 Heteroscedasticity Test.....	22
3.5.3 Multicollinearity Test .....	23
3.5.4 Serial Correlation Test.....	23
3.5.5 Unit Root Test .....	23
3.6 Data Analysis .....	24
3.6.1 Statistical Model.....	24
3.6.2 Test of Significance .....	25
<b>CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION.....</b>	<b>26</b>
4.1 Introduction .....	26
4.2 Descriptive Analysis .....	26
4.3 Diagnostic Test.....	28
4.3.1 Heteroscedasticity Test.....	28
4.3.2 Multicollinearity Test .....	31
4.3.3 Normality Test .....	33
4.3.4 Serial Correlation Test.....	34
4.3.5 Unit Roots Test.....	35
4.4 Regression Analysis .....	36

4.5 Interpretation of Findings and Discussions Results .....	37
4.5.1 Effect of Fund Size on Returns of Unit Trust.....	37
4.5.2 Effect of Fund Age on Returns of Unit Trust.....	38
4.5.3 Effect of Fund Risk on Returns of Unit Trust .....	39
4.5.4 Effect of Fund Cost on Returns of Unit Trust .....	39
4.5.5 Effect of Stock Market Performance on Returns of Unit Trust.....	40
<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION .....</b>	<b>41</b>
5.1 Introduction .....	41
5.2 Summary of Findings .....	41
5.3 Conclusion.....	43
5.4 Recommendations .....	45
5.5 Limitations of the Study .....	47
5.6 Recommendation for Further Research.....	48
<b>REFERENCES.....</b>	<b>50</b>
<b>APPENDICES .....</b>	<b>56</b>
Appendix I: Data Collection Sheet.....	56
Appendix II: Raw Data .....	57
Appendix III: Study Variables .....	59
Appendix IV: List of Registered Unit Trust Funds in Kenya .....	62

## LIST OF TABLES

Table 4. 1: Summary Statistics .....	26
Table 4. 2: Breusch-Pagan test.....	28
Table 4. 3: Value Inflation Factor (VIF).....	32
Table 4. 4: Shapiro Wilk Test.....	33
Table 4. 5: Wooldridge test for autocorrelation in panel data .....	34
Table 4. 6: Augmented Dicky Fuller (ADF) Breitung Type .....	35
Table 4. 7: PCSEs Regression Model.....	36

## LIST OF FIGURES

Figure 4. 1: The spread of residuals from the mean fund size and fund age .....	29
Figure 4. 2: The spread of residuals from the mean fund risk and fund cost.....	30
Figure 4. 3: The spread of residuals from the mean NASI.....	31

## **ABSTRACT**

Globally, researchers are preoccupied with determining the effect of fund factors on returns of unit trust funds. The study sought to establish the effect of fund specific characteristics on returns of unit trusts licensed by Capital Market Authority of Kenya. The study was under pinned by three theories including modern portfolio, efficient market hypothesis and capital asset pricing model. Descriptive research design was adopted. The study targeted 24 unit trusts licensed by CMA as at 31st December 2018. Publicly available information including audited financial statements and other published data by specific fund managers and Capital Market authority. The study examined various assumptions of classical least squares. Data extracted and recorded on data collection sheet were entered into excel sheet to generate variables. The excel sheet was then exported to STATA 14. Standard deviation, Minimum, means, scatter plots and maximum were used as descriptive statistics. The study adopted panels corrected standard errors model due to violation of a number of OLS assumptions. The research established a direct significant causal effect link between fund size and returns of unit trust. The research also established a direct and weak causal effect link existing between fund age and returns of unit trusts. In addition, the inverse causal effect link existing between fund risk and returns of unit trusts was major. The effect of fund cost on returns of unit trusts was statistically significant hence; the research concluded that cost of fund management is central in explaining returns of unit trust funds. Finally, the research revealed an inverse and weaker link existing between stock market performance and returns of unit trusts. Given the direct and stronger causal effect link existing between fund size and returns of unit trust, the study recommends to fund manager to collect more funds under their management. Based on the direct and weaker causal effect link existing between fund age and returns of unit trust funds, the research suggest to fund managers not be worried much about the returns at the beginning since fund performance increases with age. Given an inverse and stronger causal effect association between fund risk and returns of unit trust funds, the study suggest to management of unit trust funds licensed by capital market authority of Kenya to find ways of handling portfolio risk. The effect of fund cost on unit trust fund returns was statistically significant, hence the study recommends to management of Unit trust funds to find ways of cutting down on costs. The cost of fund being a major determinant of returns of unit trust funds, the fund managers should practice continuous cost reduction strategies. The management should identify cost drivers and then cut down on unnecessary cost in a bit to reduce the cost of fund management. Finally, given that, the study established an inverse and weaker association existing between common stock market performance and returns of unit trusts, the study suggest that management of unit trust fund managers should index their funds on performance of share market. The study also recommends that future studies should focus on other determinants of returns of unit trust funds including management factors, economic factors and industry factors. The study also recommends that other study to be carried out with more fund specific factors including fund diversification.

# CHAPTER ONE: INTRODUCTION

## 1.1. Background of the study

Globally, researchers are preoccupied with determining the factors affecting returns on unit trust fund. Literature regarding Unit trust funds performance have tended to segregate the factors affecting unit trust funds performance into economic and non-economic factors (Al-Khazali, Lean & Samet, 2014). The economic factors separate that part of the return, which has an economic cause including different fees and expenses of a fund, size of it, investment strategy of a fund, liquidity of portfolio assets etc. Non-economic factors include location of the manager, his education and selection ability of manager (Saha, & Dey, 2011). Unit trust funds gives an opportunity to individual investor to be part of a well-managed and diversified investment portfolio. Unit trust funds occupy a central position in the revitalizing of financial market of any country (Hamdani, 2018).

The study was under pinned by three theories including modern portfolio, efficient market hypothesis and capital asset pricing model. Efficient market hypothesis has a leading proponent in Fama (1970). The theory argues capital market has a central role in resource channeling from where they are in excess to where they are needed. The major role capital market of any country is allocation of scarce economic resources for the production purposes in an efficient manner. The model proposes that resource allocation is based on signals given by prices. Markowitz (1952) proposed modern Portfolio theory that postulates that portfolio or assets risk could be defused via diversification. Finally, Capital Asset Pricing Model (CAPM) proposed by Sharpe (1964) categories the risk

facing an individual asset or portfolio in two major risk classes that is systematic and nonsystematic risks. Systematic risk results from changes in the market factors that affects all financial assets in the market while nonsystematic risk are risk associated with specific financial asset.

The association between fund specific factors and unit trust in Kenya case has been far from desirable. Maina (2013) while concentrating on fund value, fund size and fund growth reported that the link between portfolio features and unit trust fund financial performance was significant. Mbataru (2013) revealed that fund specific factors including fund age, size of fund, growth in assets and initial investment play a critical role on growth of unit trust fund performance Kenya. In a study by Muindi (2011) that factors affecting managers' securities selection ability, forecasting ability, market timing ability and how they influenced unit trust fund financial performance.

### **1.1.1 Fund Specific Factors**

Empirical literature has identified a number of fund specific factors that influence returns of unit funds. Size of fund is factors prominently identified in literature has affecting returns of unit funds (Lou, 2012), explained that long term mutual funds performance is influenced by addition of more funds to the portfolio so as to enjoy economies of scale. The ability of the fund to enjoy economies of scale may influence the returns of funds from advantages of economies of scale (Mentel & Horváthová, 2016). Fund age is also very critical in funds returns. Fund's age affect funds performance as unit trust fund usually perform exemplarily with increase in age of the fund.

The fund usually outperforms its initial stage as the fund managers experience improves and the number of assets under the portfolio improves (Açıkgöz, Uygurtürk & Korkmaz, 2015).

Risk is another critical factor influencing returns of unit trust funds. Theoretical literature shows that investors in the funds that are homogenously equity based get rewards in terms of dividends and growth in value of fund for being risk takers (Jordan, Miller & Dolvin, 2015). The generally accepted proxies for risk are standard deviation of returns and beta of the fund to market performance (Bogle, 2015). Finally cost of funds also impact on returns as unit trust. Some empirical literature have shown that funds that are actively managed may be out performed by funds that are passively managed since the later enjoy lower operational costs (Sialm & Tham, 2015). The funds that are actively managed involves cost like research expenses and operating cost proxied by expense to income ratio. Grinblatt and Titman (1992) noted that unit trust funds could generate adequate returns to offset costs. Unit trust with high operational costs ought to generate adequate returns to cover the high cost involved in management (Morri & Lee, 2009).

### **1.1.2 Returns on Unit Trust Funds**

Returns from unit trust funds includes gain on initial capital and periodic dividends or interest. Periodic income can be measured by yield rate that is the percentage of the return of the value asset (Mentel & Horváthová, 2016). The returns that is expected is the average returns multiplied by their probabilities. An investor will seek to maximize returns of unit trust at minimum possible risk. The investor will consider diversifiable and non-diversifiable risk (Berk & Van Binsbergen, 2015).

Non-diversifiable risk are risks affecting all securities being traded in the capital market. Diversifiable risk is non-systematic risk which only affects a certain industry hence can be reduced or eliminated in a portfolio through diversification. Hence, a portfolio should contain assets that are negatively correlated (Ahmad, Sun & Khidmat, 2017).

The returns on unit trust fund may be measured using book value proxies and stock market indices. In developed financial markets where there is substantial unit trust traded in stock exchange market, the returns of individual unit trust is determined as the quotient of the difference between current and previous price as a percentage. The returns of all unit trusts determined by unit trust fund index (Jordan, Miller & Dolvin 2015). However, in a under developed financial market like in Kenyan case, almost all unit trusts are not traded at the stock exchange market. In cases of under developed financial markets, the returns of unit trust is measured rom the book value indicators including ROA, ROE and IRR (Cici, Kempf & Puetz, 2016).

### **1.1.3 Fund Specific Factors and Returns of Unit Trusts Funds**

The association between fund specific factors and returns to unit trust funds has been examined by both theoretical and empirical literature. Theoretical literature has identified number of fund specific factors influencing returns of units' trust funds. Large portfolio of unit trust fund tends to have large and diversified assets under them hence the volume of assets purchased or offloaded every day increases and so is the volatility that enhances performance in capital market (Chen et al., 2013). Markowitz, (1952) posits that the performance of unit trust fund is affected by unsystematic risk associated with individual assets.

The fund age is critical in modeling returns of unit trusts since more recent unit trust funds assets may be confronted with higher expenses in their startup period compared to older funds (Mbataru, 2013). Fund cost includes fund-running expenses including administration fees, brokerage costs, and cost of market research (Maina (2013). Grinblatt and Titman (1992) showed that a mutual fund must generate adequate returns to cover the running expenses of the fund.

Empirical literature also exists on link between fund specific factors and fund performance. Wanda (2015) noted that the association between fund returns, fund age, fund size, transactional and cost was significant.

In addition, the link between fund age, size and performance was inverse and the link between performance of mutual fund was a positive one. Maina (2013) established that the association between unit trust financial performance and portfolio characteristics was positive and strong. Ingrid (2015) revealed a positive link between interest rate and returns of mutual funds. Fathima (2017) noted that the association between pension funds' assets and equity growth was positive.

#### **1.1.4 Unit Trust Funds in Kenya**

Unit Trusts provide the small investor, the answers to investing in a widely diversified investment without having to invest a lot of money initially at once. The financial market has been becoming more complicated and riskier for ordinary investor. Unit trust funds provides an investment vehicle that is simple to understand and require small initial capital for the individual investor (Maina, 2013).

The investment vehicle of unit trust fund pools resources from many individual investors and the funds generated are professionally managed. Fund managers usually channel the resources generated into diversified portfolio of financial assets like bonds, shares, other money market funds (CMA, 2018). Unit Trusts are held on trust for on behalf of individual investors. It is constituted by a deed or indenture regulating the powers, rights and duties of the parties to the arrangement (Dragos, Tatu-Cornea & Tulbure, 2016).

The fund management industry in Kenya is at its formative stages and it is thus underdeveloped. There are 24 investment schemes licensed by both the Capital Market authority (CMA) and Retirement Benefit Authority (RBA), who play the role of managing the pension and unit trusts funds as well as other institutional and retail funds (CMA,2019). The first unit trust scheme was registered in 2002 and since then there has been phenomenal growth in the market in terms of share trading volumes market capitalization and share prices including the tremendous growth of these funds with numerous others being registered annually (Kimani & Kisaka (2016). Unit Trust offer investors more choices, besides enhancing returns to investors of between 8% - 10% as more compared to 3% - 4% return gained from traditional investments such as bank deposits (Kimani & Kisaka, 2016). In Kenya, the leading unit trust collective scheme includes Old Mutual Unit Trusts, CBA Unit trusts, Suntra Unit Trusts, British American, ICEA, Zimele, Madison and Dyer and Blair which collect monthly incomes for collective investment (CMA, 2019).

## **1.2 Statement of the Problem**

Unit trusts is a good alternative investment that provides investors with opportunity to invest their resources into a well-managed and diversified fund that that promises good

returns at lower risks. Empirical literature regarding unit trust funds performance have tended to segregate the determinants of unit trusts returns into economic and non-economic factors (Al-Khavari, Lean & Samet, 2014). The economic factors affecting return of fund include fees and expenses of a fund, size of it, investment strategy of a fund, liquidity of portfolio assets etc. Non-economic factors include location of the manager, his education and selection ability of manager (Saha, & Dey, 2011).

The investment in unit trust fund in Kenya has had its own fair. Most unit trust fund managers in Kenyan context are risk averse hence, they tend to go for financial assets will lower risk. The risk averse behavior has limited growth and performance of this investment opportunity as the bulk of funds are invested in banks and the stock market CMA (2017). The unit trust funds in Kenya have had an average growth per annum of Ksh. 1.9 billion. The average growth for the last nine years has been just Ksh.17.6 billion a much lower rate compared to pension funds that has performed more than double in same period. Most funds in Kenya have been allocated to quoted common stock and bank deposits that are less risky and more liquid CMA (2017).

Global studies exist on the association between fund specific factors and returns of unit trusts. Chen and Qin (2017) examined factors that explain financial performance of unit trust in Singapore with the findings showing that small fund funds sizes did not perform better than large funds even though performance of large funds was not significant. Hamdani (2018) revealed that performance of mutual funds that were equity-dominated was influenced by manager's stock selection skills, inflation, fund size and market timing skill. Chen et al. (2013) found that competence of fund manager affects the performance of unit trust funds with high competence associated with high returns.

Locally, Wandia (2015) established that the link among mutual fund returns, fund size, fund age and transaction costs were statistically significant. Gathimba (2017) showed that interest rates and growth of equity have were positively related to pension fund asset growth. The study therefore made generalization that the growth of pension fund assets were directly influenced by equity growth.

Kigen (2016) showed that administration expenses and investment expenses influence pension funds financial performance significantly. Ingrid (2015) revealed the link between market interest rate, Treasury bill rate and returns of mutual funds was positive. Even with the studies already carried out, there exist gaps in literature that warrants a study to fill the gaps established. First, most of the studies carried out have been done in developed nations. Second, there exist few studies examining the link existing among various fund specific factors on returns of unit trust funds. The study therefore sought to establish answer to the research question, what is the effect of fund specific factors on returns of unit trust funds licensed by CMA of Kenya.

### **1.3 Research Objectives**

To establish the effect of fund specific characteristics on returns of unit trusts licensed by Capital Market Authority of Kenya.

### **1.4 Value of the Study**

The research is a very critical document for policy, practice and theory. For the purpose of theory, the study will act as an empirical literature towards to development of further research and providing empirical evidence for use by educators and researcher in finance.

The study will extend the breath of literature existing on factors influencing the performance of unit trust funds. The study provides an in-depth analysis on the link subsisting among fund factors and returns of unit trusts in Kenya. Regarding policy, the findings provides a critical instrument for the government agencies for policy purposes. The ministry of Treasury and finance may find this study useful as a policy formulation insight.

The ministry may use the findings as background knowledge when formulating policies regarding financial deepening in the country through unit trust fund vehicle and promoting investments in unit trusts to attract more capital flow. The regulators play the important role of promulgation of regulations and ensuring compliance hence the finding of the study will ensure they develop policies and regulations that enhance further development of capital market.

Finally, for practice purpose, fund managers, financial planners and analysts are the main players or drivers of the investment industry will find the study useful. In the course of their work, they tend to evaluate their performance against benchmarks. This study would interest them in that the results will confirm the factors that drive performance of the funds/investments they manage and address the same to ensure the delivery sufficient returns to their clients as outlined in their investment prospectus. As providers of capital, investors are very much concerned in the returns to their funds hence the findings will aid them in evaluation and choice of fund managers.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

The chapter reviews the theoretical foundations, determinants of returns of unit trust funds, empirical literature, summary of literature and conceptual framework. The aim of literature review was to identify knowledge gaps.

### **2.2 Theoretical Foundation**

Theoretical foundations provides a base on which the unit trusts and fund specific factors are related. The study was based on three theories including capital asset pricing, efficient market hypothesis and modern portfolio theory. Theoretical literature provides a priori on the expected relationship among the explanatory and outcome variables.

#### **2.2.1 Efficient Markets Hypothesis (EMH)**

Fama (1970) first proposed the theory to explain the pricing of financial assets. The theory explains that that the major function of capital market is allocation of economies resources efficiently for production of goods needed in the economy. The model proposes that resource allocation is based on signals relayed by activity in the common stock market. Firms that have floated common stock in the capital make productive investment decisions in purchase or sale of securities to acquire or relinquish ownership of different financial assets based on the premise that prices of financial assets reflect data on capital market activities. The EMH can be considered under three stages of efficiency based on degree of information flow and access among players in the market. The stages of efficiency include weak, semi strong and strong forms of efficiency.

The efficient market hypothesis has been criticized based on unrealistic assumptions. First, the hypothesis assumes that the investors receive and use the information in the same way. In investors, utilize information received differently to arrive at different opinions on the value of stock traded (Schwert, 2001). The second weakness of the theory is that it wrongly presupposes that no investor can outperform another given same information and size of investment. In reality, investors with same information and size of investment earn varying returns. Finally, theory holds that no single investor can outperform market using best investment strategy even though some investors have tended to beat the market over time (Fama & French,1988).

The theory was relevant for the current study on affect a fund's ability to beat the market overall performance. The theory provides an understanding that the efficiency level of the capital market affects the possibility of the fund to outperform the market for instance in semi strong efficient market, if a fund manager has inside information on probably future changes in trading in stock exchange market, then they can reorganize their portfolio in a way to cash in their favour by offloading some assists and acquiring some other assets.

### **2.2.2 Modern Portfolio theory (MPT)**

The major outstanding proponent of MPT is Markowitz (1952). The theory explains that portfolio risk is quantifiable by calculating the deviations of returns of the portfolio from the mean returns of the same. The theory postulates that the total risk of basket of financial assets forming the portfolio can be reduced through diversification such that the portfolio has a mix of financial assets with varying income and risk characteristics.

The theory explains that expected returns of a portfolio can be generated by getting the summation of the product of expected returns of each financial asset making up the portfolio and the weight of the asset in the portfolio (Markowitz (1952). Portfolio is a function of risk of specific assets under the portfolio as well as the covariance in returns between all possible pairs of assets that can be formed under the portfolio (Hughes, 2002)

The Modern Portfolio Theory (MPT) demonstrates that financial managers can construct a portfolio in a way that the expected risk of the portfolio is at its minimum and the expected returns is at maximum. The construction of portfolio is a continuous process where some assets are offloaded while others are purchased until the firm can achieve optimal portfolio (Rubinstein, 2002). The process of investment portfolio construction goes through major steps from portfolio objectives, selection of financial assets, valuation of financial assets, allocation of assets, evaluation of performance of portfolio and portfolio change. The goal of portfolio theory is to construct a portfolio that has a portfolio risk that is lower than any individual security (Markowitz, 1952).

The theory proposed has been criticized by various scholars especially on the assumption of investor rationality. Research especially in behavioral finance has shown that investors are always not rational hence, decisions regarding purchase or sale of financial assets has a component that is not based on rational analysis of risk and returns (Lubatkin & Chatterjee, 1994). In addition, theory has also been challenged for assuming that investors have same idea about returns as investors behaviour is also affected irrational thoughts commonly referred to as biases.

The theory was however useful for current study as the as managers of unit trust funds can rely on the theory in constructing investment portfolio that ensures returns are optimized and risk diversified across assets in the portfolio. Using the theory, fund managers can categorize risks into diversifiable and non-diversifiable risk.

### **2.2.3 Capital Asset Pricing Model**

The theory was initially postulated by Sharpe (1964) to explain the valuation and pricing of financial assets. The model postulates that returns and risk are related such that they correlate. The theory categories the risk facing an individual asset or portfolio in two major risk classes that is systematic and unsystematic risks. Systematic risk results from changes in the market factors that affects all financial assets in the market while unsystematic risk is risk associated with specific financial asset. The unsystematic risk has no correlation with general market conditions (Lintner, 1965). Unsystematic risk usually is determined from within the firm that issue the financial assets for instance in the case of shares, unsystematic risk may result from change in senior management or market offering of the firm that issued the share.

The fund manager can construct a basket of financial assets such that the risk associated with individual assets are diversified across a collection of assets. Unfavorable condition in the firm that issues a financial asset like shares may change leading to risk in the asset. Such a risk may be offset by another condition in a different firm that issue different financial asset (Markowitz, 1952). In the CAPM, a financial asset faces two classes of risks that is unsystematic and systematic.

The unsystematic risk is handled through diversifying of the portfolio of assets while systematic risk is handled with other methods such as derivatives and hedging (Sharpe, 1964). The CAPM theory has also faced a number of criticisms especially concerning the assumptions under which it operates. First, the theory assumes that performance of a financial assets depends on asset level factors captured by unsystematic risk and market factors captured by systematic risk. This assumption may be miss leading if relied on blindly in that there are other wide economic factors that also influence returns of financial assets (Elton & Gruber, 1997).

Secondly, the theory assumes investors can offload or purchase new stock at any time without losing value given zero transactions costs. The happening in the real common stock market is that stock investors face stiff transactions cost that might influence their purchase or sale behavior (Roll, 1977). The CAPM theory was very relevant for the current study in that managers of unit trust funds should construct a portfolio of different financial assets such that diversifiable risk are eliminated or reduced to the minimum and that the only risk facing the fund is the market undiversifiable risk that can be retained or handled using other financial risk management strategies such as derivatives and hedging.

## **2.3 Determinants of Returns of Unit Trust Funds**

The section examines the determinants of the returns of unit trust including the fund size, firm age and assets Allocation.

### **2.3.1 Fund Size**

The first fund factor considered under this study is fund size. Empirical review has established that large fund size has the capability to spread overhead costs over all the

financial assets under the portfolio (Wandia, 2015). Large portfolio of assets could be sold or purchased at closure prices hence narrow price spread given their market positions and substantial volumes exchanged. Large fund sizes are more liquid compared to small stock size hence volume traded each day improves and so is their liquidity that enhances their performance (Islam & Dewri, 2016). Large portfolio of unit trust fund tends to have large and diversified assets under them hence the volume of assets purchased or offloaded every day increases and so is the volatility which enhances performance in capital market (Chen et al., 2013).

### **2.3.2 Fund Age**

The next factor reconsidered is the fund age. Fund age occupies a critical role in determining the returns of unit trusts since more recent unit trust funds assets may be confronted with higher expenses in their startup period compared to older funds. This is because of advertising expenses incurred may put tress on the unit trust funds costs hence impact negatively on returns (Mbataru, 2013). In addition, newly acquired common stock prices might be influenced by a speculation in the capital market especially during learning period by the management of the fund (Muindi, 2011). There is a close link subsisting among fund age and prices of unit trust since recent stocks of assets have a tendency to be smaller than more established ones, making the new assets to enjoy lower (Sialm & Tham, 2015).

### **2.3.3 Fund Risk**

The third fund specific factor influencing returns of unit trust funds that is considered in this study is fund risk. Empirical literature has established that equity based unit trust

funds enjoy high returns since the holders of this fund are compensated for having high risk appetite. In the long run, equity dominated funds tends to outperform other funds since they are very volatile hence the probability of prices changing in very high (Jordan, Miller & Dolvin, 2015). The most used proxies for measuring risk is risk beta and SD of returns. The Beta quantifies non-diversifiable risks which captures the responsiveness of an asset or portfolio returns to market return (Kosowski, 2011). The standard deviation on the other hand is a measure that related the degree by which returns of individual asset or portfolio spreads around the mean returns of the market (Bogle, 2015).

#### **2.3.4 Fund Cost**

The final fund specific factor affecting returns of unit trust considered in the study is fund cost of management. Empirical review has established that funds that are passively managed tends to incur lower costs of management and they outperform actively managed funds (Sialm & Tham, 2015). The funds that are actively managed incurs various cost including operating and research expenses. The cost of management of fund is usually measured by ratio of expenses to returns. Maina (2013) described fund expense ratio as percentage proportion of the value of the unit trust fund taken up by fund running expenses including administration fees, brokerage costs, and cost of market research. Grinblatt and Titman (1992) showed that a mutual fund must generate adequate risk adjusted returns to cover the running expenses of the fund.

#### **2.4 Empirical Review**

The empirical review has expounded on various studies both globally and locally. Wandia (2015) studied the fund attributes. The research established a significant link

among mutual fund returns, fund size, fund age and transaction costs. Wandia (2015); however, was based on mutual funds that are not identical to unit trust funds. Hamdani (2018) empirically investigated mutual fund determinants. The study revealed that performance funds dominated in common stock was influenced by manager's stock selection skills, inflation, fund size and market timing skill. Even though the influence of fund size and market timing skills was not statistically significant. Hamdani (2018) even though concentrated on macroeconomic and fund manager characteristics and ignored fund specific factors.

A study by Maina (2013) studied how portfolio features impacts on unit trust financial performance in Kenya. The research concentrated on fund value, fund size and fund growth. The research revealed that the association between portfolio features and fund financial performance was significant. Maina (2013) however ignored other fund factors like fund risk and cost. A Kenyan study by Ingrid (2015) empirically studied the determinants of mutual funds performance. The research concentrated on fund size, fund risk, managerial competence, investment styles and returns persistence. The research revealed the link between market interest rate, Treasury bill rate and returns of mutual funds was positive. Ingrid (2015) however did not consider factors like fund cost and role of financial market performance on fund returns.

Gathimba (2017) investigated the factors that affect growth of pension fund assets. The study used descriptive research design and secondary data for the fourteen years starting with 2002 to 2015. The study used descriptive statistics to determine the distribution while the regression analysis was used establish the link between interest rates, inflation, growth in equity market, and pension fund asset growth.

The research showed that interest rates and growth of equity have were positively related pension fund asset growth in Kenya. Gathimba (2017) however, was based on pension funds, which are different from unit trust funds hence findings may not be wholesome applied in mutual fund returns.

Mutuku (2011) investigated the link subsisting among fund composition and risk and returns of mutual funds. Mutuku (2011) was concentrated on mutual funds that are not identical to unit trust funds and ignoring other fund specific factor. Mbataru (2013) studied the determinants of unit trust funds performance. Research concentrated on factors including size of fund, expense ratio, age of fund, growth in assets and the amount initially invested in the fund. Results revealed that fund growth was very crucial to unit trust fund performance. The study by Mbataru (2013) however, finds that the link between funds' performance, age, size and amount initially invested were not statistically significant contrary to theoretical expectations.

Kigen (2016) empirically investigated how fund size affects pension fund' financial performance in Kenya. The research targeted 1232 pension fund schemes registered under Retirement Benefits Authority. The study employed panel data regression and Pearson correlation coefficient Results showed that administration expenses and investment expenses influence pension funds financial performance significantly. Kigen (2016) even though very insightful, it was based on pension funds and may not be fully applied in forecasting future returns of unit trust funds. Ukima (2016) examined how liquidity risk effect mutual fund financial performance in Kenya. This research provides a framework for individual investors considering that mutual funds financial performance was affected by liquidity risk.

Results established that fund mutual fund performance is a function of fund characteristics. Ukima (2016) however concentrated on liquidity risk while ignoring other equally critical fund factors affecting fund returns. Muindi (2011) investigated the factors explaining variation in unit trusts performance. The research was on equity and money market funds. The study focused on the factors including fund managers' securities selection ability, forecasting ability, market timing ability and how they influenced unit trust fund financial performance. Results established that ability to time market, ability to selected right security and ability to forecast explains the variation in unit trusts performance. Study by Muindi (2011) concentrated on equity or money market funds and ignored other unit trust funds like balance fund which also deserve consideration hence study has limited application.

## **2.5 Summary of Literature**

Wandia (2015) revealed that performance funds dominated in common stock was influenced by manager's stock selection skills, inflation, fund size and market timing skill. Hamdani (2018) even though concentrated on macroeconomic and fund manager characteristics and ignored fund specific factors. Maina (2013) revealed that the association between portfolio features and fund financial performance was significant. Ingrid (2015) revealed the link between market interest rate, Treasury bill rate and returns of mutual funds was positive. Gathimba (2017) showed that interest rates and growth of equity have were positively related pension fund asset growth in Kenya. Mbataru (2013) revealed that fund growth was very crucial to unit trust fund performance. Kigen (2016) showed that administration expenses and investment expenses influence pension funds financial performance significantly.

Ukima (2016) established that fund mutual fund performance is a function of fund characteristics. Muindi (2011) established that ability to time market, ability to selected right security and ability to forecast explains the variation in unit trusts performance.

## 2.6 Conceptual Framework

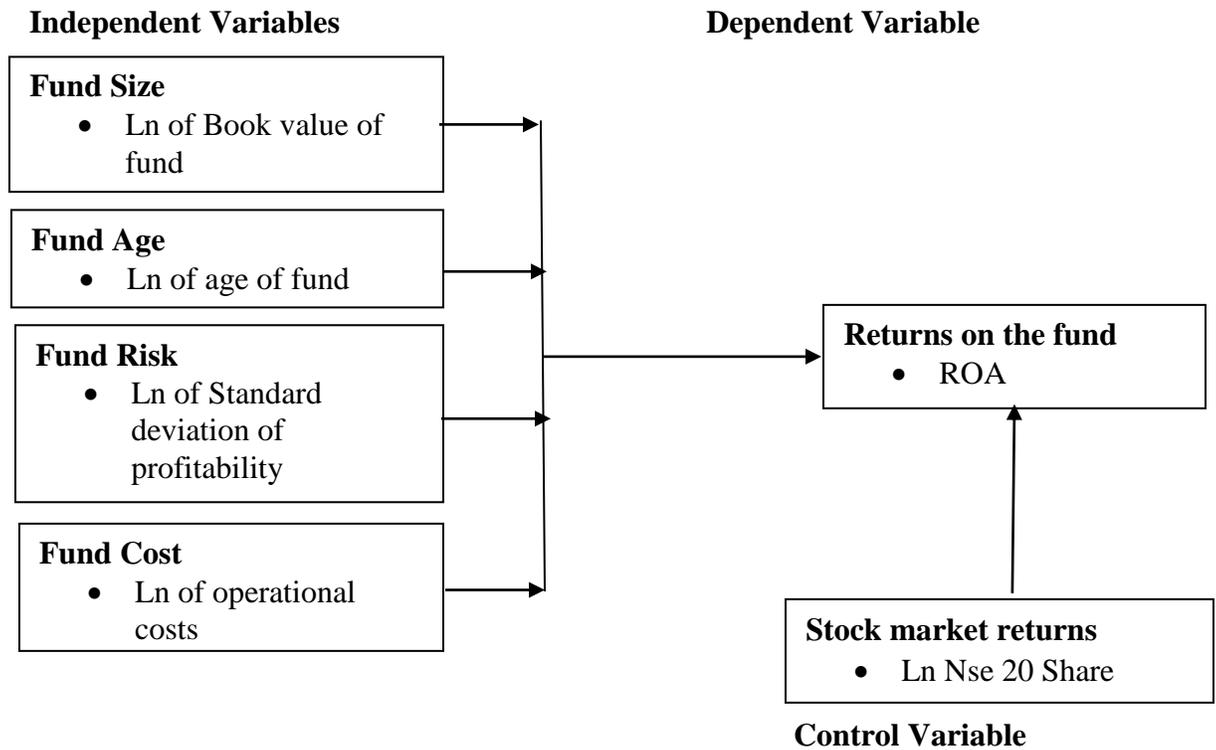


Figure 2. 1: Conceptual Framework

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

The chapter presented the research and sampling design and data collection and analysis procedures. Methodology is a systematic process that enables researcher to collect and analyze relevant data regarding the variables of concern.

### **3.2 Research Design**

Descriptive research design adopted enables collection of data as it exists in the natural environment without manipulating any condition in the natural environment (Cooper, 2014). The descriptive design was therefore be appropriate for the study in that information regarding funds specific factors and returns of unit trust funds was be collected from the audited financial statement as they are reported without changing any information.

### **3.3 Target Population**

The study targeted 24 unit trusts licensed by CMA as at 31<sup>st</sup> December 2018. The population describes all elements that are of concern. The study was a census unit trust that operated between 2014 to 2018. The targeted unit trust funds are shown in appendix IV.

### **3.4 Data Collection**

Publicly available information including audited financial statements and other published data by specific fund managers and Capital Market authority. Annual data funds risk, fund size, fund age and returns of assets were obtained specifically from published financial statement of each unit trust fund and other publication by CMA.

Monthly data on the NASI index as at the end of each month was obtained from NSE and aggregated to get annual values to be used as proxy of securities market performance.

### **3.5 Diagnostic Test**

The diagnostic tests describe the test to determine robustness of financial models used in parameter estimation. The study examined various assumptions of classical least squares.

#### **3.5.1 Normality Test**

In statistics and econometrics, normality describes a distribution of observed data such that the mean and mode are equal (Garson, 2012). Normality assumption describes the distribution of residuals of regression are such that the data assumes symmetric bell shaped when plotted on normal curve. Serious violation of normality assumption leads to miss leading parameter estimates. Shapiro Wilk test was adopted to examine the presence of normality with p-values greater than 0.05 implies normal distribution.

#### **3.5.2 Heteroscedasticity Test**

In econometrics, homoscedasticity is an assumption of econometric models such that the residuals have a constant variance. Data showing presence of heteroscedasticity will have population variance differing significantly with that of the sample Gujarati (2003). Absence of homoscedasticity means presence of heteroscedasticity problem. Presence of heteroscedasticity leads to standard errors that are misleading hence type I and type II error may be committed in presence of the problem. Breusch-Pagan / Cook-Weisberg was adopted such that p-values generated less than 0.05 signify presence heteroscedasticity problem.

### **3.5.3 Multicollinearity Test**

In statistics, the association existing among explanatory variables is referred to as multicollinearity. High multicollinearity is a problem as it leads to parameter estimates that are inflated and miss leading (Kothari, 2004). Data with high multicollinearity will have correlation coefficients that are almost perfect. Variance Inflation Factor (VIF) was used to examine the existence of multicollinearity. VIF values greater than 10 signify multicollinearity problem (Gujarati, 2003).

### **3.5.4 Serial Correlation Test**

In econometrics, autocorrelation is an assumption of classical least squares where contemporaneous and lagged values of the regressand and regressors are highly correlated with each other Gujarati (2003). The presence of autocorrelation leads to parameter estimates that are inflated and misleading since a portion of the variation in the dependent variable is explained by lagged values of the same variables and that the regression residuals are correlated over time. Wooldridge Drukker test was employed to establish the presence of autocorrelation such P value greater than 0.05 implies no autocorrelation problem.

### **3.5.5 Unit Root Test**

In statistics, when data on observed variable shows stationarity, there is no presence of unit roots. Gujarati (2003) noted that regression residuals are said not to have unit roots when the variance and mean does not differ significantly based on change in time. Presence of unit roots signifies that the regressand is not only affected by the observed exogenous variables but also the unobserved time variant variables.

Augmented Dickey Fuller (ADF) test was employed to establish the stationarity of regression residuals such that P-Values greater than 0.05 signify non-stationarity.

### 3.6 Data Analysis

Data extracted and recorded on data collection sheet were entered into excel sheet to generate variables. The excel sheet was then exported to STATA 14. Standard deviation, Minimum, means, scatter plots and maximum were used as descriptive statistics. The study adopted Prais-Winsten regression; correlated panels corrected standard errors (PCSEs) model due to violation of a number of OLS assumptions. The PCSEs enabled the study to correct for auto correlated residuals and heteroskedastic regression residuals.

#### 3.6.1 Statistical Model

The link subsisting among selected fund specific factors and returns of unit trust funds examined using established while employing the model stated in equation (1).

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \beta_5 X_{5it} + \epsilon \dots\dots\dots(1)$$

Where Y = Returns on unit trust measured by return on assets (ROA)

X<sub>1</sub>= Fund size measured by natural logarithm of book value of fund

X<sub>2</sub>= Fund age measured by natural logarithm of age in years

X<sub>3</sub>= Fund risk measured by natural logarithm of standard deviation of profitability

X<sub>4</sub>= Fund cost measured by natural logarithm of operational cost of the fund

X<sub>5</sub> = Stock Market return measured by NSE All share Index

β<sub>0</sub> = intercept

$t =$  Contemporaneous Time

$i = 1, \dots, 24$

$\beta_1, \beta_2, \beta_3, \beta_4$  and  $\beta_5$  coefficients of explanatory variables.

### **3.6.2 Test of Significance**

The significance of the association existing among the regressand and exogenous variables was examined at 0.05 level of significance. The p-value generated in the regression equation were compared to 0.05 critical point. P-value less than 0.05 implies significant association between the explanatory variables fund specific characteristics and unit trust returns.

## CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

### 4.1 Introduction

The study examined the causal effect association among of selected fund specific factors and returns of unit trusts licensed by CMA. The analysis proceeded with descriptive, diagnostics and inferential statistics. The study targeted 24 unit trusts licensed by Capital market authority, however only 18 unit trust funds had published relevant data and had been in operation since licensing during the study period covering five years.

### 4.2 Descriptive Analysis

Descriptive analysis was carried out to describe the general distribution of data on the observed endogenous and exogenous variables. The descriptive analysis involved the calculation of means, standard deviation, minimum and maximum. Table 4.1 presented results on the distribution of data on observed variables.

**Table 4. 1: Summary Statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	95	.0692348	.0505744	-.2489	.1548
fundrisk	95	.0223645	.0269005	.0002437	.2228994
fundsize	95	3097373	4137828	12300	1.83e+07
fundage	95	12.42105	6.402425	4	29
fundcost	95	1463101	2164854	12250	9513415
Nasi	95	155.508	22.25476	133.34	191

Table 4.1 presented results of descriptive statistics. ROA was used as a proxy for fund returns. The mean ROA was 6.92% with some funds performing below the meanwhile other performing better than the mean. The standard deviation was about 5.05% giving

the deviation of individual firm returns from the mean returns. The fund with the minimum Return on Assets was -24% while the firm with maximum returns had 15.48% returns. Standard deviation of fund returns was employed as the proxy for fund risk. Regarding firms' risk, the mean fund risk was 0.0223 which is equivalently 2.23% showing how the average fund risk. The standard deviation of fund risk was 0.269 which is about 2.69% showing how individual unit trust fund returns deviated away from the mean fund risk for all firms. The minimum fund risk level was 0.00024 while the maximum fund risk was 0.222 depicting the highest fund risk level.

The number of years the fund has been in existence was used as the proxy for fund age. The mean fund age was 12.42 years with most Unit trust funds being about 12 years in age. The standard deviation was 6.40 years giving the spread of the fund away from the mean age. The fund with minimum age was 4 years while the fund with the highest age was 29 years of age. The mean cost of fund management was about Kshs. 146.3 Million while the standard deviation of fund cost was Kshs. 216.4 million around the mean. The minimum cost of fund management was Kshs. 12.25 million while the maximum fund cost was Kshs. 951.3 million. Regarding performance of NSE in terms of All share Index, the mean performance was 155.5 with a standard deviation of 22.26 around the mean performance. The minimum performance of the NSE was 133.34 while the maximum market performance was 191. Finally, the mean fund size was Kshs. 309.7 million with a SD of Kshs. 413.7 million. The minimum fund size was Kshs. 12.3 million while the highest fund size was Kshs. 18.3 billion.

### 4.3 Diagnostic Test

The study performed diagnostic test to establish the robustness of the model for forecasting purposes. Five diagnostic tests were performed including multicollinearity test, Serial correlation test, unit roots test, heteroscedasticity test and normality test.

#### 4.3.1 Heteroscedasticity Test

In econometrics, homoscedasticity is an assumption of econometric models such that the residuals have a constant variance. Data showing presence of heteroscedasticity will have population variance differing significantly with that of the sample Gujarati (2003). Absence of homoscedasticity means presence of heteroscedasticity problem. Presence of heteroscedasticity leads to standard errors that are misleading hence type I and type II error may be committed in presence of the problem. Breusch-Pagan / Cook-Weisberg was adopted such that p-values generated less than 0.05 signify presence heteroscedasticity problem. Table 4.2 presented the findings on heteroscedasticity test.

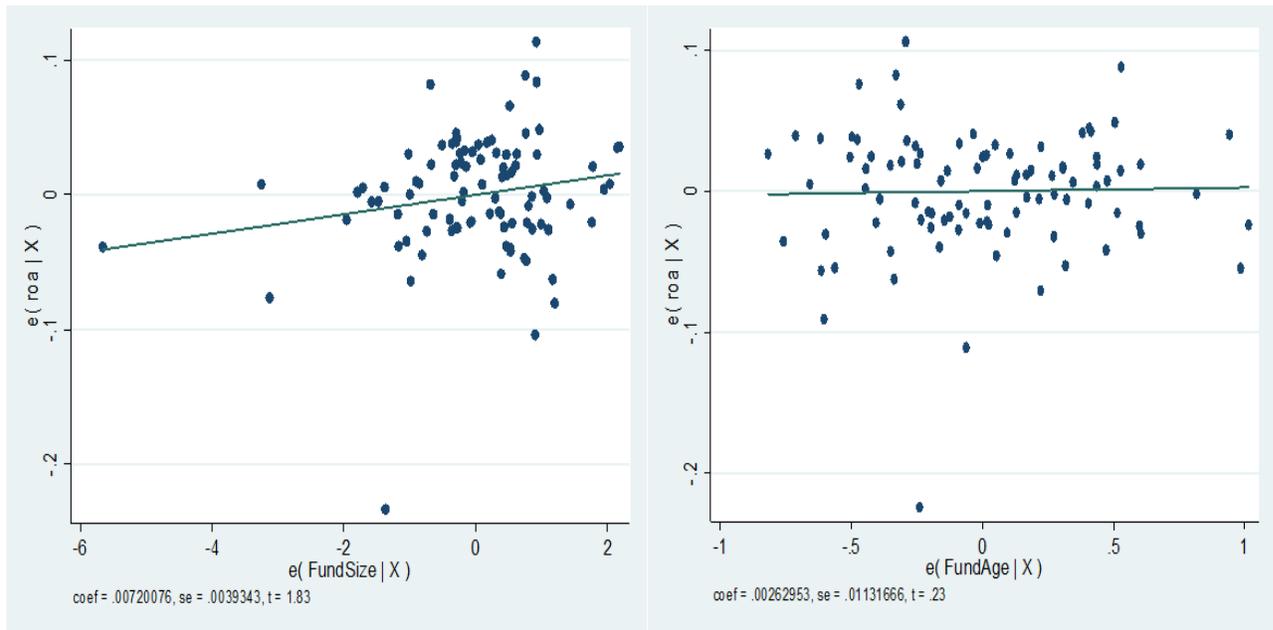
**Table 4. 2: Breusch-Pagan test**

```
. estat hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of roa

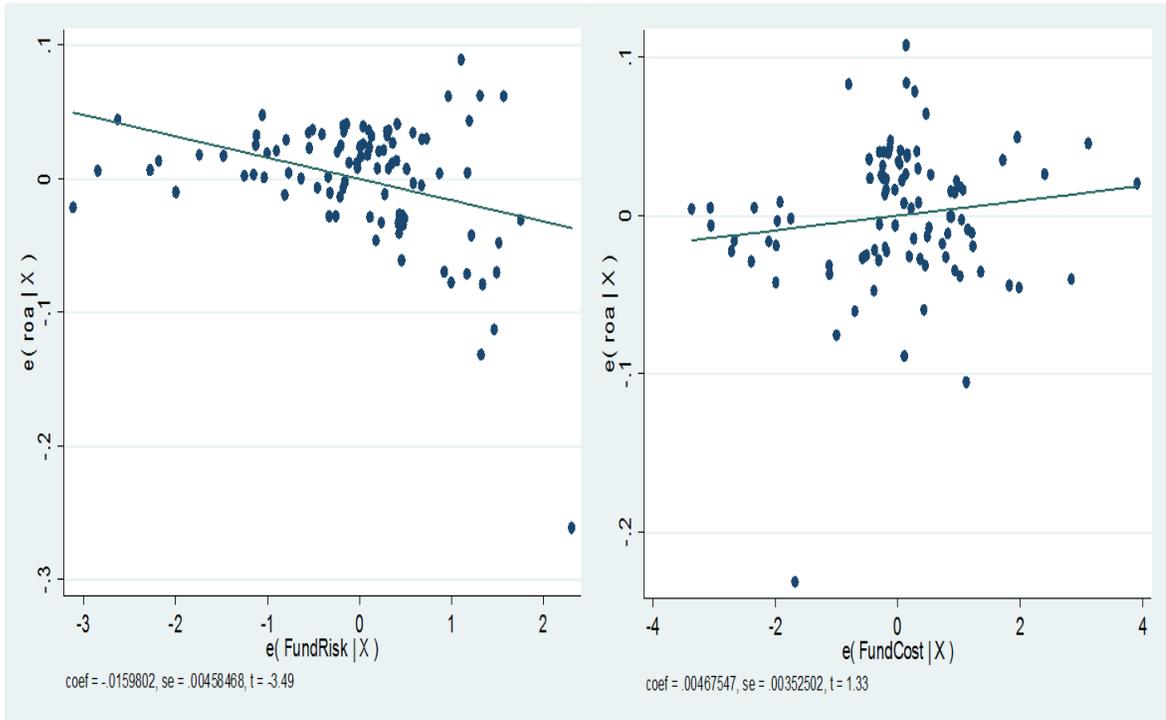
chi2(1)      =    65.08
Prob > chi2  =    0.0000
```

The findings in Table 4.2 revealed that the p-value (0.000) was less than 0.05 hence study concluded that there was heteroscedasticity making classical least squares Panel model inappropriate otherwise panels corrected standard errors (PCSEs) was adopted grammatically the presence of heteroscedasticity as presented in succeeding discussion.



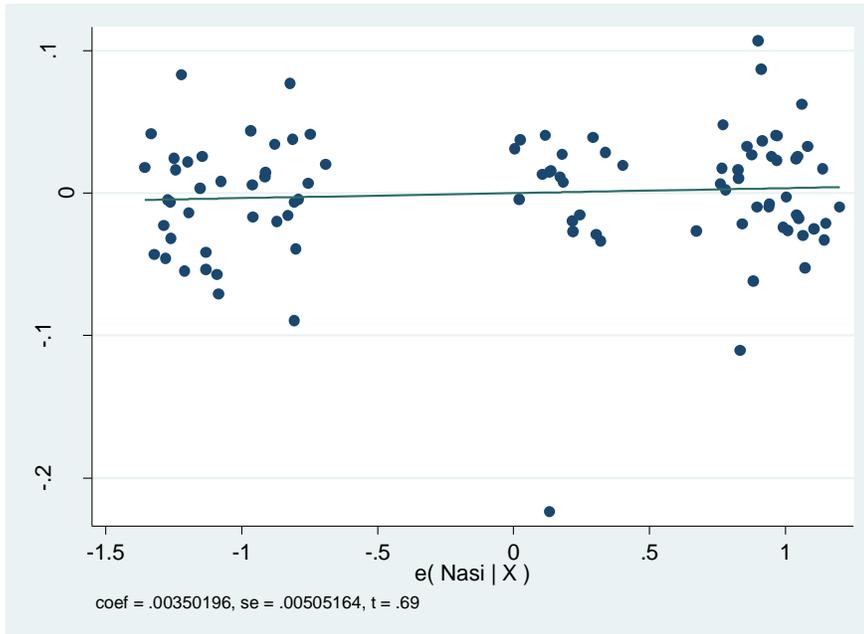
**Figure 4. 1: The spread of residuals from the mean fund size and fund age**

The fund age and fund size were not distributed around the mean with constant variance hence the study concludes that the fund size and fund age exhibited presence of heteroscedasticity.



**Figure 4. 2: The spread of residuals from the mean fund risk and fund cost**

The fund risk and fund cost were not distributed around the mean with constant variance hence the study concludes that the fund risk and fund cost exhibited presence of heteroscedasticity as established in Breusch pagan test.



**Figure 4. 3: The spread of residuals from the mean NASI**

The NASI was not distributed around the mean with constant variance hence the study concludes that NASI exhibited presence of heteroscedasticity as established in Breusch pagan test.

#### **4.3.2 Multicollinearity Test**

In statistics, the association existing among explanatory variables is referred to as multicollinearity. High multicollinearity is a problem as it leads to parameter estimates that are inflated and miss leading (Kothari, 2004). Data with high multicollinearity will have correlation coefficients that are almost perfect. Variance Inflation Factor (VIF) was used to examine the existence of multicollinearity. VIF values greater than 10 signify multicollinearity problem (Gujarati, 2003). Table 4.3 presented the results on multicollinearity test.

**Table 4. 3: Value Inflation Factor (VIF)**

```
. estat vif
```

Variable	VIF	1/VIF
FundSize	1.55	0.643762
FundCost	1.38	0.725381
FundAge	1.37	0.731657
FundRisk	1.19	0.839225
NASI	1.15	0.871028
Mean VIF	1.33	

```
. pwcorr FundSize FundAge FundRisk FundCost NASI roa
```

	FundSize	FundAge	FundRisk	FundCost	NASI	roa
FundSize	1.0000					
FundAge	0.4724	1.0000				
FundRisk	-0.1681	-0.1522	1.0000			
FundCost	0.4578	0.3134	0.1295	1.0000		
NASI	0.1434	0.2436	-0.2871	0.0968	1.0000	
roa	0.3525	0.2353	-0.3853	0.2064	0.2082	1.0000

The VIF values of the regressors were less than ten, hence; the study concluded that multicollinearity was not a problem in the current study hence the study may adopt Classical least squares panel data model in the regression if there are no unit roots otherwise PCSEs is adopted. In addition, the correlation among the explanatory variables were less than perfect with the highest correlation being 0.4724 followed by 0.4578 with the remaining having correlations being less hence problem multicollinearity was not a problem.

### 4.3.3 Normality Test

In statistics and econometrics, normality describes a distribution of observed data such that the mean and mode are equal (Garson, 2012). Normality assumption describes the distribution of residuals of regression are such that the data assumes symmetric bell shaped when plotted on normal curve. Serious violation of normality assumption leads to miss leading parameter estimates. Shapiro Wilk test was adopted to examine the presence of normality with p-values greater than 0.05 implies normal distribution. The results are presented in table 4.4 where p-values should be greater than 0.05 level of significance for normal distribution.

**Table 4. 4: Shapiro Wilk Test**

```
. swilk roa FundSize FundAge FundRisk FundCost NASI
```

Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
roa	95	0.75031	19.753	6.599	0.00000
FundSize	95	0.95220	3.781	2.942	0.00163
FundAge	95	0.97844	1.706	1.181	0.11878
FundRisk	95	0.95677	3.420	2.720	0.00327
FundCost	95	0.93826	4.884	3.508	0.00023
NASI	95	0.90782	7.293	4.395	0.00001

The results revealed that the data was not perfectly normally distributed; however, the absence of perfect normality may not affect parameter estimates greatly. However, the classical least squares assumptions have been violated hence classical least squares panel data model may not be appropriate hence the study considered the Prais-Winsten regression, correlated panels corrected standard errors (PCSEs) for regression.

#### 4.3.4 Serial Correlation Test

In econometrics, autocorrelation is an assumption of classical least squares where contemporaneous and lagged values of the regressand and regressors are highly correlated with each other Gujarati (2003). The presence of autocorrelation leads to parameter estimates that are inflated and misleading since a portion of the variation in the dependent variable is explained by lagged values of the same variables and that the regression residuals are correlated over time. Wooldridge Drukker test was employed to establish the presence of autocorrelation such P value greater than 0.05 implies no autocorrelation problem. Table 4.5 presented the results on the presence of autocorrelation.

**Table 4. 5: Wooldridge test for autocorrelation in panel data**

```
. xtserial roa FundSize FundAge FundRisk FundCost NASI

Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
      F( 1,      18) =      17.073
      Prob > F =      0.0006
```

The test results revealed that there was autocorrelation among the study variables. The presence of autocorrelation goes against the assumptions of Classical Least Squares model hence the study considered PCSEs model that can handle autocorrelated and heteroskedastic data.

### 4.3.5 Unit Roots Test

In statistics, when data on observed variable shows stationarity, there is no presence of unit roots. Gujarati (2003) noted that regression residuals are said not to have unit roots when the variance and mean does not differ significantly based on change in time. Presence of unit roots signifies that the regressand is not only affected by the observed exogenous variables but also the unobserved time variant variables. Augmented Dickey Fuller (ADF) test was employed to establish the stationarity of regression residuals such that P-Values greater than 0.05 signify non-stationarity. Table 4.6. Presented the results on the presence of unit roots.

**Table 4. 6: Augmented Dicky Fuller (ADF) Breitung Type**

<b>Variable</b>	<b>t statistics</b>	<b>p-value</b>
Return on Assets	0.4951	0.6898
Fund Size	1.4572	0.9275
Fund Age	5.5906	1.0000
Fund Risk	-1.3455	0.0892
Fund Cost	0.3715	0.6449
NASI	1.4412	0.9252

The test results revealed that there was unit roots among the study variables. All the observed parameters showed presence of unit roots with p-values being greater than 0.05. The presence of unit roots goes against the assumptions of Classical Least Squares (CLS) model hence the study adopted PCSEs model that can handle data with unit roots.

#### 4.4 Regression Analysis

Panel regression model was carried out to investigate the causal link among selected Fund specific characteristic and returns of Unit trust licensed by CMA of Kenya. The study adopted PCSEs model to estimate parameters as presented in table 4.7.

**Table 4. 7: PCSEs Regression Model**

```
. xtpcse roa FundSize FundAge FundRisk FundCost NASI, correlation(ar1) rhotype(dw)
Prais-Winsten regression, correlated panels corrected standard errors (PCSEs)

Group variable:   id                Number of obs   =           95
Time variable:   year                Number of groups =           19
Panels:          correlated (balanced)  Obs per group:
Autocorrelation: common AR(1)                min =           5
                                                avg  =           5
                                                max  =           5

Estimated covariances   =           190      R-squared        =           0.2642
Estimated autocorrelations =           1      Wald chi2(5)     =           31.11
Estimated coefficients   =           6        Prob > chi2      =           0.0000
```

roa	Panel-corrected					[95% Conf. Interval]	
	Coef.	Std. Err.	z	P> z			
FundSize	.0077413	.0037123	2.09	0.037	.0004653	.0150172	
FundAge	.008278	.0203902	0.41	0.685	-.031686	.048242	
FundRisk	-.0192931	.0056512	-3.41	0.001	-.0303692	-.008217	
FundCost	.0097804	.0042032	2.33	0.020	.0015422	.0180186	
NASI	-.0023744	.0276378	-0.09	0.932	-.0565435	.0517947	
_cons	-.2595945	.1010197	-2.57	0.010	-.4575894	-.0615996	
rho	.4902946						

The Table 4.7 presented findings on the coefficient of determination that revealed that the model under study explains 26.42% of the total variation in returns of the unit trusts with the remaining 73.58% being explained by unobserved variables that were not part of the current study.

The Table 4.7 also reveals that selected fund specific characteristics and control variable have a major effect on returns of unit trust. The p-value (0.000) generated was less than 0.05. In addition, the model was thus estimated as follows in equation (1)

$$\text{ROA}_{it} = -0.25 + 0.0077 \text{ Fund Size}_{it} + 0.008278 \text{ Fund Age}_{it} - 0.01929 \text{ Fund Risk}_{it} + 0.009780 \text{ Fund Cost}_{it} - 0.00237 \text{ NASI}_{it} + \varepsilon \dots\dots\dots(1)$$

The intercept term ( $\beta_0 = -0.25$ ) gives the levels of returns when fund specific factors are held constant at zero. The study revealed a direct significant link between fund size and returns of unit trust ( $\beta_1 = 0.0077$ , p-value =  $0.037 < \alpha = 0.05$ ). The study also showed a direct minor causal effect link between fund age and returns of unit trusts ( $\beta_2 = 0.008278$ , p-value =  $0.685 > \alpha = 0.05$ ). In addition, there was an inverse major link between fund risk and returns of unit trusts ( $\beta_3 = -0.01929$ , p-value =  $0.001 < \alpha = 0.05$ ). The study also showed a direct major association subsisting between fund cost and returns of unit trusts ( $\beta_4 = 0.009780$ , p-value =  $0.020 < \alpha = 0.05$ ). Finally, the study established an inverse link between stock market performance and returns of unit trusts ( $\beta_5 = -0.00237$ , p-value  $0.932 > \alpha = 0.05$ ).

#### **4.5 Interpretation of Findings and Discussions Results**

##### **4.5.1 Effect of Fund Size on Returns of Unit Trust**

The study revealed a direct significant link between fund size and returns of unit trust ( $\beta_1 = 0.0077$ , p-value =  $0.037 < \alpha = 0.05$ ). The effect of fund size on returns was positive meaning that when the size of the fund was expanded, the profitability improved greatly.

The improved profitability could have risen due to the fund enjoying benefits of large-scale operation where with increase in size of fund, the average cost of fund management fell leading to improved profitability. The parameter estimate ( $\beta_1= 0.0077$ ) for fund size showed that for every one unit variation in fund size, the returns increased by 0.0077 units. Further, the effect of was statistically significant implying that fund size was major influencer of returns of unit trust. The finding is in agreement with Hamdani (2018) that revealed that performance funds dominated in common stock was influenced by manager's stock selection skills, inflation, fund size and market timing skill. Even though the influence of fund size and market timing skills was not statistically significant.

#### **4.5.2 Effect of Fund Age on Returns of Unit Trust**

The study also showed a direct minor causal effect link between fund age and returns of unit trusts ( $\beta_2=0.008278$ ,  $p\text{-value} = 0.685 > \alpha=0.05$ ). The direct link between fund age and returns of unit trusts implied that the returns of the funds became better with increased age of the fund. The positive effect meant when the funds has been in existence for a long time, the experience the fund's manager increases regarding stock selection and portfolio diversification. The experience of the fund manager in selecting highly performing financial assets leads to rising profitability as the fund age. The parameter estimate ( $\beta_2=0.008278$ ) for fund age showed that for every one year increase in fund age, the returns improved by 0.0082 units. However, the effect was not statistically significant implying that fund age is a weaker influencer of returns of the fund. The finding is in congruence with study by Ukima (2016) that established that age of fund significantly explains the changes in returns of mutual funds. Main (2013) revealed that the association between portfolio age and fund financial performance was significant.

#### **4.5.3 Effect of Fund Risk on Returns of Unit Trust**

In addition, there was an inverse major link between fund risk and returns of unit trusts ( $\beta_3 = -0.01929$ ,  $p\text{-value} = 0.001 < \alpha = 0.05$ ). The inverse link existing between fund risk and returns of unit trust funds implied that when the risk of the fund increased the returns of the unit trust funds fell. High risks captured by large standard deviation of returns eats into the returns of the funds. The estimated parameter ( $\beta_3 = -0.01929$ ) for fund risk shows that for every one percent increase in fund risks, the returns of the same fund fell by 1.929%. In addition, the effect was statistically significant implying that the fund risk explained returns in a major way. The fund thus enjoys high returns when the risk are low accustomed by stable economic environment. Empirical literature has established that equity based unit trust funds enjoy high returns since the holders of this fund are compensated for having high risk appetite. In the long run, equity dominated funds tends to outperform other funds since they are very volatile hence the probability of prices changing in very high (Jordan, Miller & Dolvin, 2015).

#### **4.5.4 Effect of Fund Cost on Returns of Unit Trust**

The study also showed a direct major association subsisting between fund cost and returns of unit trusts ( $\beta_4 = 0.009780$ ,  $p\text{-value} = 0.020 < \alpha = 0.05$ ). The effect of fund cost on returns was positive that is contrary to expectation that when costs increases, the returns falls. However, the positive relationship means that fund increases from one period to the next, the absolute total costs also increases as the firm's costs. The effect was however significant implying that cost of fund management is very critical in explaining the returns of unit trust funds.

The study has a basis in literature. Wandia (2015) established that the link between mutual fund returns and transaction costs were statistically significant. Mbataru (2013) studied the determinants of unit trust funds performance. The results revealed that fund growth was very crucial to unit trust fund performance. Ukima (2016) that established that fund characteristics had a major causal effect link between mutual fund returns and fund cost meaning that transaction cost and age of und significantly explains the changes in returns of mutual funds.

#### **4.5.5 Effect of Stock Market Performance on Returns of Unit Trust**

Finally, the study established an inverse link between stock market performance and returns of unit trusts ( $\beta_5 = -0.00237$ ,  $p\text{-value } 0.932 > \alpha = 0.05$ ). The inverse causal effect link between common stock market returns and returns of unit trusts implying that when the stock exchange experience improve performance, the performance of unit trust funds did not improve as such. The inverse relationship implies that unit trust funds are invested in a few financial assets traded at the security exchange market while the performance of the stock exchange market captures all stocks traded. In addition, the effect was not statistically significant as NASI captures all the stock traded at NSE while most unit trust funds are invested in a few selected stocks hence performance of stock exchange market in general may not significantly affects the performance of unit trust funds in a significant way. The finding is in agreement with Grinblatt and Titman (1992) who showed that the returns of mutual funds is dependent on the performance of individual financial assets the funds has been invested in.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION**

### **5.1 Introduction**

The chapter presents the summary of the findings generated in chapter four. Based on the findings a number of conclusions and are drawn. The chapter then presents the recommendations based on the insight in the conclusions. Study examined the effect of fund specific factors on returns of unit trust funds licensed by capital market authority of Kenya.

### **5.2 Summary of Findings**

The study revealed direct and significant link between fund size and returns of unit trust ( $\beta_1= 0.0077$ , p-value =  $0.037 < \alpha = 0.05$ ). The effect of fund size on returns was positive meaning that when the size of the fund was expanded, the profitability improved greatly. The parameter estimate ( $\beta_1= 0.0077$ ) for fund size showed that for every one unit variation in fund size, the returns changed by 0.0077 units. The study also established a direct and weaker causal effect link between fund age and returns of unit trusts ( $\beta_2=0.008278$ , p-value =  $0.685 > \alpha = 0.05$ ). The direct effect of fund age on returns of unit trusts implies that the returns of the funds became better with increased age of the fund. The parameter estimate ( $\beta_2=0.008278$ ) for fund age showed that for every one year variation in fund age, the returns changed by 0.0082 units.

In addition, the inverse causal effect link between fund risk and returns of unit trusts was major ( $\beta_3 = -0.01929$ ,  $p\text{-value} = 0.001 < \alpha = 0.05$ ). The inverse causal effect link existing fund risk and returns of unit trusts implied that the association between fund returns and risk was major.

The estimated parameter ( $\beta_3 = -0.01929$ ) for fund risk shows that for every one percent increase in fund risks, the returns of the same fund fell by 1.929%. In addition, the effect was statistically significant implying that the fund risk explained returns in a major way. The direct causal link between fund cost and returns of unit trusts was major ( $\beta_4 = 0.009780$ ,  $p\text{-value} = 0.020 < \alpha = 0.05$ ). The effect of fund cost on returns was positive that is contrary to expectation that when costs increases, the returns falls. However, the direct association could result from the size of the fund increases from one period to the next, the absolute total costs also increases as the firms insure additional cost in the management of the funds. The effect was however significant implying that cost of fund management is very critical unit trust funds performance.

Finally, the study causal link existing between common stock market performance and unit trusts returns where it the study revealed an inverse and weak causal link existing between common stock market performance and returns of unit trusts ( $\beta_5 = -0.00237$ ,  $p\text{-value} = 0.932 > \alpha = 0.05$ ). The effect of stock market returns on returns of unit trust funds was negative implying that when the stock exchange experience improve performance, the returns of unit trust fund fell given that unit trust funds are only invested in a few financial assets while stock market performance captures all floated shares.

### **5.3 Conclusion**

The research established a direct significant causal effect link between fund size and returns of unit trust. The study therefore concluded that the effect of fund size was major hence, returns of unit trust was a function of fund size.

The effect of fund size on returns was positive meaning that when the size of the fund was expanded, the profitability improved greatly. The improved profitability could have risen due to the fund enjoying benefits of large scale operation hence with expansion in size of fund, the average cost of fund management fell leading to improved profitability. Further, the effect of was statistically significant implying that fund size was major determinant of unit trust returns

The research also established a direct and weak causal effect link existing between fund age and returns of unit trusts. The research thus made conclusion that the impact of fund age was weaker even though age leads to increased returns. The direct causal effect link existing between fund age and returns of unit trusts implies that the returns of the funds became better with increased age of the fund. The direct association between the variables is due to the reasons that as funds age, the experience the fund's manager increases regarding stock selection and portfolio diversification. The experience of the fund manager in selecting highly performing financial assets leads to rising profitability as the fund age. However, the effect was not statistically significant implying that the age of the fund is a weaker determinant of unit trust returns.

In addition, the inverse causal effect link existing between fund risk and returns of unit trusts was major. The study thus concluded that the effect of fund risk was major in

explaining returns of unit trust funds licensed by capital authority. The inverse link existing between fund risk and returns of unit trust implies the association between fund risk and returns go opposite direction. The negative effect implies that when the risk of the fund increased the returns of the unit trust funds fell. High risks captured by large standard deviation of returns eats into the returns of the funds.

In addition, the effect was statistically significant implying that the fund risk explained returns in a major way. The fund thus enjoys high returns when the risk are low accustomed by stable economic environment. The effect of fund cost on returns of unit trusts was statistically significant hence, the research concluded that cost of fund management is central in explaining returns of unit trust funds. The effect of fund cost on returns was positive that is contrary to expectation that when costs increases, the returns falls. However, the direct link between study variables is due to the reasons that an increase in fund size from one period to the next leads to the increase in absolute total costs as management of larger funds requires more human and non-human resources in its management. The effect was however significant implying that cost of fund management is very critical in explaining the unit trust returns.

Finally, the research revealed an inverse and weaker link existing between stock market performance and returns of unit trusts. The inverse link between stock market performance and returns of unit trusts implies that when the stock exchange experience improve performance, the unit trusts returns fell marginally. The inverse link existing id due to reasons that unit trust funds put into a few financial assets traded at the security exchange market while the performance of the stock exchange market captures all stocks traded. In addition, the effect was not statistically significant as NASI captures all the

stock traded at NSE with unit trust being while most unit trust funds are put into a few selected stocks thus performance of unit trust funds may differ significantly with that of stock exchange market.

#### **5.4 Recommendations**

Given the direct and stronger causal effect link existing between fund size and returns of unit trust, the study recommends to fund manager to collect more funds and out them under their management. The management should recruit for more funds under each unit trust scheme. The management can do this efficiently running the funds such that the returns can steadily rise to attract more investors into each unit trust. The increased fund size means that the unit cost of fund management falls as the funds enjoys economies of scale. The falling per unit cost leads to increased profitability given a level of returns.

Based on the direct and weaker causal effect link existing between fund age and returns of unit trust funds, the research suggest to fund managers not be worried much about the returns at the beginning since fund performance increases with age. The management of new funds should focus much on learning stock selection and portfolio diversification so as to make them better fund managers in the future. Further, the management of older funds should focus on perfecting their funds management skills that comes with age of fund. Generally, funds management in its self does not influence returns much in itself unless the age of the fund is accompanied by the management learning on stock selection and portfolio diversification.

Given an inverse and stronger causal effect association between fund risk and returns of unit trust funds, the study suggest to management of unit trust funds licensed by capital

market authority of Kenya to find ways of handling portfolio risk. One of the major mechanisms should involve optimal portfolio diversification.

The management of the funds should have a variety of securities under each unit trust scheme to lower the expected returns of the whole fund. In addition, the management should select stocks and financial assets in such a way that the fund mimics the whole stock exchange market. Funds that are indexed on stock market returns tends to perform the same as the stock market.

The effect of fund cost on unit trust fund returns was statistically significant, hence the study recommends to management of Unit trust funds to find ways of cutting down on costs. The cost of fund being a major determinant of returns of unit trust funds, the fund managers should practice continuous cost reduction strategies. The management should identify cost drivers and then cut down on unnecessary cost in a bit to reduce the cost of fund management. However, the positive relationship could be explained by the fact that as the size of the fund increases from one period to the next, the absolute total costs also increases as the firms issues additional cost in the managed funds.

Finally, given that, the study established an inverse and weaker association existing between common stock market performance and returns of unit trusts, the study suggest that management of unit trust fund managers should index their funds on performance of share market. Further, since the effect of stock market returns on returns of unit trust funds was negative implying that when the stock exchange experience improve performance, the unit trusts fell marginally. The inverse relationship was due to reasons that unit trust funds are invested in a few financial assets traded at the security exchange

market while the performance of the stock exchange market captures all stocks traded. The fund returns would increase when stock performance increases if the fund is an indexed fund.

### **5.5 Limitations of the Study**

A number of empirical gaps remains. The current was based on secondary data alone. The use of secondary data is slightly limiting in that some aspects of fund specific factors cannot be adequately measured using secondary data alone. Secondary data collected from financial statements are also prone to manipulation by fund managers to project a picture of a financially sound fund which may not be the case.

The current study was also limited to four fund specific factors only that affects returns of unit trust funds. There are other fund specific factors that were not covered in the current study that also impact on return on funds including fund diversification. Returns of unit trusts are also affected by other factors that may not be fund specific. The factors not studies includes fund manager factors, fund issuer factors and industry specific factors. Modeling of returns of unit funds needs should be exhaustive to enable accurate forecasting of returns of unit trust funds.

The study also relied on static models for estimating the parameters. The use of static models is limiting, as it cannot enable the study to examine dynamic nature of variables. Static models tend to capture the stocks and not the flows aspects of the variables in the study. The fund specific factors have both the flows and stock aspects that could not be adequately examined based on the static models used. The study also examined the

overall returns of unit trust funds. Different aspects of the fund had different return rate with the study capturing the average returns of all the funds under each scheme.

The limitation of getting the average returns for all the funds under each scheme is that each aspect of the fund had different returns. Some aspects of fund under the scheme performed better while other performed poorly. In the current study, it was not possible to differentiate the returns of different funds under each scheme.

### **5.6 Recommendation for Further Research**

The study was successfully carried out on the relationship between fund specific factors on returns of unit trust funds in Kenya. However, a number of empirical gaps remains. Another empirical research should be carried out that uses both secondary and primary and secondary data. The use of both secondary and primary data would enable the study to capture the fund specific factors better. The primary data would act as the triangulation for the study.

The study also recommends that future studies should focus on other fund specific factors affecting returns of unit trust funds that were not in the scope of the current study. The fund specific factors nor considered in the current study includes fund diversification and fund popularity. In addition, other determinants of unit trust funds can be considered in future studies. The other determinates includes fund management factors, macroeconomic aggregates and industry specific factors.

The study finally recommends that a study be carried out that compares the returns of various funds under each unit trust scheme such as indexed funds, equity funds, mixed funds. Different aspects of the fund had different return rate with the study capturing the average returns of all the funds under each scheme.

Some aspects of fund under the scheme performed better while other performed poorly. In the current study, it was not possible to differentiate the returns of different funds under each scheme. The study of different funds under the scheme would enable the study to differentiate returns of unit trust funds based on type of fund

The use of static models is limiting, as it cannot enable the study to examine dynamic nature of variables. Static models tend to capture the stocks and not the flows aspects of the variables in the study. The study therefore recommends that future studies should be carried out using dynamic models to be in a position to capture the flows nature of the variables and to capture the dynamic nature of the variables of interest.

## REFERENCES

- Al-Khazali, O., Lean, H. H., & Samet, A. (2014). Do Islamic stock indexes outperform conventional stock indexes? A stochastic dominance approach. *Pacific-Basin Finance Journal*, 28, 29-46.
- Açıkgöz, E., Uygurtürk, H., & Korkmaz, T. (2015). Analysis of factors affecting growth of pension mutual funds in Turkey. *International Journal of Economics and Financial Issues*, 5(2), 427-433.
- Ahmad, Y., Sun, G., & Khidmat, W. B. (2017). Fund-Specific Determinants of Performance: An Empirical Study of Islamic and Conventional Mutual Funds of Pakistan. *International Journal of Economics and Financial Issues*, 7(5), 359-370.
- Aouni, B., Doumpos, M., Pérez-Gladish, B., & Steuer, R. E. (2018). On the increasing importance of multiple criteria decision aid methods for portfolio selection. *Journal of the Operational Research Society*, 69(10), 1525-1542.
- Bogle, J. C. (2015). *Bogle on mutual funds: New perspectives for the intelligent investor*. John Wiley & Sons.
- Cici, G., Kempf, A., & Puetz, A. (2016). The valuation of hedge funds' equity positions. *Journal of Financial and Quantitative Analysis*, 51(3), 1013-1037.
- Chen, Y., & Qin, N. (2017). The Behavior of Investor Flows in Corporate Bond Mutual Funds. *Management Science*, 63(5), 1365-1381.
- Chen, J., Hong, H., Jiang, W., & Kubik, J. D. (2013). Outsourcing mutual fund management: Firm boundaries, incentives, and performance. *The Journal of Finance*, 68(2), 523-558.

- CMA (2018). Annual Reports and financial statement 2017-2018. Capital Market Authority.
- CMA (2019). List of Licensees & Approved Institutions – May 9, 2019. Capital Market Authority.
- Cooper, D. R. (2014). Schindler. *Business Research New York: McGraw Hill*.
- Dragotă, I. M., Tatu-Cornea, D., & Tulbure, N. (2016). Determinants of development of the mutual fund industry: a socio-cultural approach. *Prague Economic Papers*, 25(4), 476–493.
- Elton, E. J., & Gruber, M. J. (1997). Modern portfolio theory, 1950 to date. *Journal of Banking & Finance*, 21(11-12), 1743-1759.
- Fama, Eugene and Kenneth French (1988), Permanent and Temporary Components of Stock Prices, *Journal of Political Economy*, 96, 246-273.
- Fung, W., Hsieh, D. A., Naik, N. Y., & Ramadorai, T. (2008). Hedge funds: Performance, risk, and capital formation. *The Journal of Finance*, 63(4), 1777-1803.
- Gathimba, J. (2017). *Factors Affecting the Growth of Pension Fund Assets in Kenya* (Doctoral dissertation, United States International University-Africa).
- Hamdani, F. (2018). Factors affecting equity mutual fund performance: Evidence from Indonesia. *Investment Management & Financial Innovations*, 15(1), 1.
- Hughes, D. (2002). *Asset Management in Theory and Practice: An Introduction to Modern Portfolio Theory*. Global Professional Publishi.
- Ingrid, A.P., (2015). Factors Affecting Performance of Mutual Funds in Kenya (Unpublished thesis) University of Nairobi.

- Islam, M. R., & Dewri, L. V. (2016). Performance of public mutual funds (PMFs) in emerging economies: A case of Bangladesh. *International Journal of Business and Management, 11*(6).
- Jordan, B. D., Miller, T. W., & Dolvin, S. D. (2015). *Fundamentals of investments: valuation and management*. McGraw-Hill Education.
- Kempf, E., Manconi, A., & Spalt, O. G. (2017). Learning by doing: The value of experience and the origins of skill for mutual fund managers. *Available at SSRN 2124896*.
- Kigen, A. K. (2016). *Effect of Fund Size on the financial performance of Pension Funds in Kenya* (Doctoral dissertation) KCA University.
- Kimani, P., & Kisaka, S. (2016). The impact of collective investment schemes on financial inclusion in Kenya. *Journal of Poverty, Investment and Development, 1*(1), 54-73.
- Kosowski, R. (2011). Do mutual funds perform when it matters most to investors? US mutual fund performance and risk in recessions and expansions. *The Quarterly Journal of Finance, 1*(03), 607-664.
- Lintner, J. (1965). Security prices, risk, and maximal gains from diversification. *The journal of finance, 20*(4), 587-615.
- Lou, D. (2012). A flow-based explanation for return predictability. *The Review of Financial Studies, 25*(12), 3457-3489.
- Lubatkin, M., & Chatterjee, S. (1994). Extending modern portfolio theory into the domain of corporate diversification: does it apply?. *Academy of Management Journal, 37*(1), 109-136.

- Maina, B. W. (2013). The Effect Of Size On The Performance Of Mutual Funds In Kenya (Unpublished Thesis).UON, Nairobi
- Malkiel, B. G., & Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The journal of Finance*, 25(2), 383-417.
- Mansor, F., & Bhatti, M. I. (2011). Risk and return analysis on performance of the Islamic mutual funds: evidence from Malaysia. *Global Economy and Finance Journal*, 4(1), 19-31.
- Markowitz, H. (1952). Portfolio selection. *The journal of finance*, 7(1), 77-91.
- Mbataru, R., & Wanjau, K. (2013). Role of information system security in the growth of small and Medium enterprises in Kenya: a survey of Information Communication Technology firms in Nairobi. *European Journal of Business and Innovation Research*, 1(3), 74-83.
- Monjazebe, M., & Ramazanpour, E. (2013). The effect of economic factors on the efficiency of mutual funds in Iran Seyedeh Javaneh Ahmadi Tulamy. *Technical Journal of Engineering and Applied Sciences*, 3(15), 1707-1711.
- Morri, G., & Lee, S. L. (2009). The performance of Italian real estate mutual funds. *Journal of European Real Estate Research*, 2(2), 170-185.
- Mugenda, O. & Mugenda AG (2003), Research Methods: quantitative and Qualitative approaches. *Nairobi: ACTS*.
- Muindi, K. J. (2011). The Determinants of Performance of Unit Trusts in Kenya (Unpublished thesis). University of Nairobi, Kenya.

- Naveen, S., & Mallikarjunappa, T. (2016). A Study On Comparative Analysis Of Risk And Return With Reference To Stocks Of Cnx Bank Nifty. *International Journal of Scientific Research and Modern Education*, 1(1), 737-744.
- Okoth, A. K. (2014). *The Effect Of Interest Rate and Inflation On Growth Of Collective Investment Schemes In Kenya* (Doctoral dissertation, Masters Thesis. School Of Buiness, KCA University).
- Pellinen, A., Törmäkangas, K., Uusitalo, O., & Munnukka, J. (2015). Beliefs affecting additional investment intentions of mutual fund clients. *Journal of Financial Services Marketing*, 20(1), 62-73.
- Roll, R. (1977). A critique of the asset pricing theory's tests Part I: On past and potential testability of the theory. *Journal of financial economics*, 4(2), 129-176.
- Saha, S., & Dey, M. (2011). Analysis of Factors Affecting Investors' Perception of Mutual Fund Investment. *IUP Journal of Management Research*, 10(2).
- San Ong, T., Teh, B. H., Soh, C. H., & Yan, Y. L. (2012). Malaysian real estate investment trusts: a performance and comparative analysis. *International Journal of Economics and Finance*, 4(5), p73.
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *The journal of finance*, 19(3), 425-442.
- Schwert, G. William (2001), *Anomalies and Market Efficiency*, in G. Constantinides, et. al., *Handbook of the Economics of Finance*, North Holland.
- Sialm, C., & Tham, T. M. (2015). Spillover effects in mutual fund companies. *Management Science*, 62(5), 1472-1486.

Ukima, M. G. (2016). *The Effect of Liquidity Risk on the Financial Performance of Mutual Funds in Kenya* (Unpublished Thesis) University of Nairobi, Nairobi.

Wandia, W. E. (2015). *The Effect of Fund Characteristics on the Returns of Mutual Funds in Kenya* (Doctoral Dissertation, School Of Business, University Of Nairobi).

## APPENDICES

### Appendix I: Data Collection Sheet

<b>Variables/Time</b>	<b>2018</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Book value of Fund in Ksh					
Age of Fund in Years					
Returns of Fund (ROA)					
Annual Nasi					
Operational Cost Ksh					

## Appendix II: Raw Data

ID	year	ROA	Average ROA	RISK	Firm Size(M)	Age	Cost(M)	NSE 20S INDEX
1	2014	0.038	0.0663	0.020	1983361.499	10	793344.6	137
1	2015	0.072	0.0644	0.005	2155827.716	11	611670.9	145
1	2016	0.093	0.0682	0.017	2222502.8	12	530420.5	133.34
1	2017	0.012	0.0790	0.047	2267860	13	849603.2	171.2
1	2018	0.120	0.0838	0.026	2150000	14	7882500	191.00
2	2014	-0.249	0.0663	0.223	20944	4	24396	137
2	2015	0.096	0.0644	0.022	1183312.271	5	338725.1	145
2	2016	0.096	0.0682	0.020	1245591.864	6	359164.3	133.34
2	2017	0.096	0.0790	0.012	1353904.2	7	380257.5	171.2
2	2018	0.096	0.0838	0.009	1367580	8	415411	191.00
3	2014	0.096	0.0663	0.021	950000	25	443562	137
3	2015	-0.013	0.0644	0.055	842053	26	491433	145
3	2016	0.030	0.0682	0.027	1055048	27	601973	133.34
3	2017	0.072	0.0790	0.005	9615500	28	507678	171.2
3	2018	0.072	0.0838	0.009	8580000	29	632999	191.00
4	2014	0.081	0.0663	0.010	287872	8	2211750	137
4	2015	0.081	0.0644	0.012	5000000	9	1950000	145
4	2016	0.081	0.0682	0.009	5250000	10	2155265	133.34
4	2017	0.081	0.0790	0.002	5512500	11	2100542	171.2
4	2018	0.081	0.0838	0.002	12,300	12	2105832	191.00
5	2014	0.044	0.0663	0.016	219016	18	213494	137
5	2015	0.079	0.0644	0.010	13499500	19	208147.7	145
5	2016	0.079	0.0682	0.008	14210000	20	207058.2	133.34
5	2017	0.079	0.0790	0.000	14500000	21	216411.8	171.2
5	2018	0.079	0.0838	0.003	14790000	22	213217.1	191
6	2014	0.092	0.0663	0.018	5296233.299	15	3430300	137
6	2015	0.092	0.0644	0.020	5426468.544	16	3145828	145
6	2016	0.092	0.0682	0.017	5652571.4	17	3112203	133.34
6	2017	0.092	0.0790	0.010	5767930	18	3061769	171.2
6	2018	0.092	0.0838	0.006	6930000	19	3011500	191
7	2014	0.086	0.0663	0.014	90,041	10	3273777	137
7	2015	-0.019	0.0644	0.059	88,396	11	4378537	145
7	2016	-0.052	0.0682	0.085	5537647	12	5486651	133.34
7	2017	0.089	0.0790	0.007	7717890	13	3598223	171.2
7	2018	0.090	0.0838	0.004	7150000	14	3489500	191
8	2014	0.080	0.0663	0.010	2531668.24	7	22954	137
8	2015	0.080	0.0644	0.011	2751813.305	8	20453	145
8	2016	0.064	0.0682	0.003	2425810	9	31,365	133.34
8	2017	0.086	0.0790	0.005	2937210	10	28,028	171.2
8	2018	0.080	0.0838	0.002	1890000	11	28345	191
9	2014	0.058	0.0663	0.006	723322.8672	8	412294	137
9	2015	0.066	0.0644	0.001	794860.2936	9	395487.4	145
9	2016	0.073	0.0682	0.003	796453.2	10	389103	133.34
9	2017	0.094	0.0790	0.011	865710	11	363154.3	171.2
9	2018	0.099	0.0838	0.011	980000	12	348000	191
10	2014	0.100	0.0663	0.024	11506503.38	25	6328577	137
10	2015	0.082	0.0644	0.012	11741329.98	26	6545647	145
10	2016	0.104	0.0682	0.025	13192505.6	27	6470163	133.34
10	2017	0.061	0.0790	0.013	14339680	28	7002379	171.2
10	2018	0.120	0.0838	0.026	18330000	29	6814700	191
11	2014	0.022	0.0663	0.032	1758088.28	5	849367.7	137
11	2015	-0.045	0.0644	0.078	1958615.8	6	970253.8	145

11	2016	-0.020	0.0682	0.062	1091722.05	7	951599.3	133.34
11	2017	0.020	0.0790	0.042	4333930	8	9513415	171.2
11	2018	0.025	0.0838	0.041	4590000	9	9465500	191
13	2014	0.091	0.0663	0.018	756732.3546	8	2065500	137
13	2015	0.091	0.0644	0.019	780136.448	9	429646.1	145
13	2016	0.091	0.0682	0.016	857292.8	10	423523.7	133.34
13	2017	0.091	0.0790	0.009	931840	11	417849.5	171.2
13	2018	0.099	0.0838	0.011	1000000	12	460000	191
14	2014	0.092	0.0663	0.018	639563.4664	5	390133.7	137
14	2015	0.092	0.0644	0.020	702816.996	6	402618	145
14	2016	0.092	0.0682	0.017	755717.2	7	395501.8	133.34
14	2017	0.093	0.0790	0.010	771140	8	392797.8	171.2
14	2018	0.102	0.0838	0.013	860000	9	381600	191
15	2014	0.031	0.0663	0.025	2004261.669	6	822386.5	137
15	2015	0.130	0.0644	0.047	2024506.736	7	1048201	145
15	2016	0.155	0.0682	0.061	2200550.8	8	1024610	133.34
15	2017	0.142	0.0790	0.045	2245460	9	1201626	171.2
15	2018	0.131	0.0838	0.033	2340000	10	1753000	191
16	2014	0.100	0.0663	0.024	1254593.034	15	702572.1	137
16	2015	0.103	0.0644	0.027	1378673.664	16	695988.8	145
16	2016	0.106	0.0682	0.027	1476096	17	690186	133.34
16	2017	0.109	0.0790	0.021	1537600	18	685189.7	171.2
16	2018	0.140	0.0838	0.040	780000	19	421200	191
17	2014	0.084	0.0663	0.013	537637.5164	4	295700.6	137
17	2015	0.075	0.0644	0.007	617974.1568	5	302886.2	145
17	2016	0.085	0.0682	0.012	663062.4	6	300246.3	133.34
17	2017	0.085	0.0790	0.004	720720	7	317785.3	171.2
17	2018	0.085	0.0838	0.001	670000	8	368500	191
18	2014	0.075	0.0663	0.006	407559.5014	10	236384.5	137
18	2015	0.077	0.0644	0.009	457932.024	11	230567.6	145
18	2016	0.080	0.0682	0.008	497752.2	12	225601.6	133.34
18	2017	0.082	0.0790	0.002	502780	13	221537.7	171.2
18	2018	0.085	0.0838	0.001	920000	14	542800	191
19	2014	0.031	0.0663	0.025	54624	8	12250	137
19	2015	0.025	0.0644	0.028	67463	9	22544	145
19	2016	0.025	0.0682	0.031	74468.886	10	29654	133.34
19	2017	0.045	0.0790	0.024	70490	11	28534	171.2
19	2018	0.033	0.0838	0.036	330000	12	35243	191
20	2014	0.024	0.0663	0.030	533,996	7	293697.9	137
20	2015	0.028	0.0644	0.026	595,867	8	272508.9	145
20	2016	0.022	0.0682	0.033	585,453	9	351271.6	133.34
20	2017	0.024	0.0790	0.039	587209.1032	10	343214.9	171.2
20	2018	0.024	0.0838	0.042	587385.266	11	375564.2	191

### Appendix III: Study Variables

ID	year	x1	x2	x3	x4	x5	Y
1	2014	14.50	2.30	-3.91	13.58	4.92	0.04
1	2015	14.58	2.40	-5.26	13.32	4.98	0.07
1	2016	14.61	2.48	-4.06	13.18	4.89	0.09
1	2017	14.63	2.56	-3.05	13.65	5.14	0.01
1	2018	14.58	2.64	-3.65	15.88	5.25	0.12
2	2014	9.95	1.39	-1.50	10.10	4.92	-0.25
2	2015	13.98	1.61	-3.80	12.73	4.98	0.10
2	2016	14.04	1.79	-3.93	12.79	4.89	0.10
2	2017	14.12	1.95	-4.41	12.85	5.14	0.10
2	2018	14.13	2.08	-4.74	12.94	5.25	0.10
3	2014	13.76	3.22	-3.86	13.00	4.92	0.10
3	2015	13.64	3.26	-2.91	13.11	4.98	-0.01
3	2016	13.87	3.30	-3.60	13.31	4.89	0.03
3	2017	16.08	3.33	-5.27	13.14	5.14	0.07
3	2018	15.96	3.37	-4.76	13.36	5.25	0.07
4	2014	12.57	2.08	-4.58	14.61	4.92	0.08
4	2015	15.42	2.20	-4.44	14.48	4.98	0.08
4	2016	15.47	2.30	-4.70	14.58	4.89	0.08
4	2017	15.52	2.40	-6.48	14.56	5.14	0.08
4	2018	9.42	2.48	-6.32	14.56	5.25	0.08
5	2014	12.30	2.89	-4.17	12.27	4.92	0.04
5	2015	16.42	2.94	-4.56	12.25	4.98	0.08
5	2016	16.47	3.00	-4.86	12.24	4.89	0.08
5	2017	16.49	3.04	-8.32	12.28	5.14	0.08
5	2018	16.51	3.09	-5.78	12.27	5.25	0.08
6	2014	15.48	2.71	-3.99	15.05	4.92	0.09
6	2015	15.51	2.77	-3.92	14.96	4.98	0.09
6	2016	15.55	2.83	-4.07	14.95	4.89	0.09
6	2017	15.57	2.89	-4.65	14.93	5.14	0.09
6	2018	15.75	2.94	-5.09	14.92	5.25	0.09
7	2014	11.41	2.30	-4.27	15.00	4.92	0.09
7	2015	11.39	2.40	-2.83	15.29	4.98	-0.02
7	2016	15.53	2.48	-2.46	15.52	4.89	-0.05
7	2017	15.86	2.56	-4.92	15.10	5.14	0.09
7	2018	15.78	2.64	-5.51	15.07	5.25	0.09
8	2014	14.74	1.95	-4.63	10.04	4.92	0.08
8	2015	14.83	2.08	-4.49	9.93	4.98	0.08
8	2016	14.70	2.20	-5.89	10.35	4.89	0.06
8	2017	14.89	2.30	-5.25	10.24	5.14	0.09

8	2018	14.45	2.40	-6.03	10.25	5.25	0.08
9	2014	13.49	2.08	-5.10	12.93	4.92	0.06
9	2015	13.59	2.20	-6.96	12.89	4.98	0.07
9	2016	13.59	2.30	-5.69	12.87	4.89	0.07
9	2017	13.67	2.40	-4.52	12.80	5.14	0.09
9	2018	13.80	2.48	-4.53	12.76	5.25	0.10
10	2014	16.26	3.22	-3.74	15.66	4.92	0.10
10	2015	16.28	3.26	-4.38	15.69	4.98	0.08
10	2016	16.40	3.30	-3.68	15.68	4.89	0.10
10	2017	16.48	3.33	-4.38	15.76	5.14	0.06
10	2018	16.72	3.37	-3.67	15.73	5.25	0.12
11	2014	14.38	1.61	-3.45	13.65	4.92	0.02
11	2015	14.49	1.79	-2.56	13.79	4.98	-0.05
11	2016	13.90	1.95	-2.78	13.77	4.89	-0.02
11	2017	15.28	2.08	-3.17	16.07	5.14	0.02
11	2018	15.34	2.20	-3.18	16.06	5.25	0.03
13	2014	13.54	2.08	-4.04	14.54	4.92	0.09
13	2015	13.57	2.20	-3.96	12.97	4.98	0.09
13	2016	13.66	2.30	-4.12	12.96	4.89	0.09
13	2017	13.74	2.40	-4.75	12.94	5.14	0.09
13	2018	13.82	2.48	-4.53	13.04	5.25	0.10
14	2014	13.37	1.61	-4.00	12.87	4.92	0.09
14	2015	13.46	1.79	-3.92	12.91	4.98	0.09
14	2016	13.54	1.95	-4.07	12.89	4.89	0.09
14	2017	13.56	2.08	-4.64	12.88	5.14	0.09
14	2018	13.66	2.20	-4.35	12.85	5.25	0.10
15	2014	14.51	1.79	-3.70	13.62	4.92	0.03
15	2015	14.52	1.95	-3.07	13.86	4.98	0.13
15	2016	14.60	2.08	-2.79	13.84	4.89	0.15
15	2017	14.62	2.20	-3.10	14.00	5.14	0.14
15	2018	14.67	2.30	-3.40	14.38	5.25	0.13
16	2014	14.04	2.71	-3.74	13.46	4.92	0.10
16	2015	14.14	2.77	-3.60	13.45	4.98	0.10
16	2016	14.20	2.83	-3.62	13.44	4.89	0.11
16	2017	14.25	2.89	-3.84	13.44	5.14	0.11
16	2018	13.57	2.94	-3.23	12.95	5.25	0.14
17	2014	13.19	1.39	-4.37	12.60	4.92	0.08
17	2015	13.33	1.61	-4.93	12.62	4.98	0.07
17	2016	13.40	1.79	-4.45	12.61	4.89	0.08
17	2017	13.49	1.95	-5.45	12.67	5.14	0.09
17	2018	13.42	2.08	-6.84	12.82	5.25	0.09
18	2014	12.92	2.30	-5.13	12.37	4.92	0.07
18	2015	13.03	2.40	-4.70	12.35	4.98	0.08

18	2016	13.12	2.48	-4.81	12.33	4.89	0.08
18	2017	13.13	2.56	-6.03	12.31	5.14	0.08
18	2018	13.73	2.64	-7.00	13.20	5.25	0.09
19	2014	10.91	2.08	-3.70	9.41	4.92	0.03
19	2015	11.12	2.20	-3.59	10.02	4.98	0.03
19	2016	11.22	2.30	-3.48	10.30	4.89	0.02
19	2017	11.16	2.40	-3.74	10.26	5.14	0.05
19	2018	12.71	2.48	-3.32	10.47	5.25	0.03
20	2014	13.19	1.95	-3.51	12.59	4.92	0.02
20	2015	13.30	2.08	-3.66	12.52	4.98	0.03
20	2016	13.28	2.20	-3.42	12.77	4.89	0.02
20	2017	13.28	2.30	-3.24	12.75	5.14	0.02
20	2018	13.28	2.40	-3.17	12.84	5.25	0.02

#### **Appendix IV: List of Registered Unit Trust Funds in Kenya**

1. African Alliance Kenya Unit Trust Scheme
2. Alphafrica Umbrella Fund
3. Amana Unit Trust Funds Scheme
4. Apollo Unit Trust Scheme
5. British-American Unit Trust Scheme
6. CIC Unit Trust Scheme
7. Commercial Bank of Africa Unit Trust Scheme
8. Co-op Trust Fund
9. Diaspora Unit Trust Scheme
10. Dry Associates Unit Trust Scheme
11. Dyer and Blair Unit Trust Scheme
12. Equity Investment Bank Collective Investment Scheme
13. First Ethical Opportunities Fun
14. Genghis Unit Trust Funds
15. ICEA Unit Trust Scheme
16. Madison Unit Trust Fund
17. Nabo Africa Funds
18. Old Mutual Unit Trust Scheme
19. Sanlam Unit Trust Scheme
20. Seriani Unit Trust Scheme
21. Stanbic Unit Trust Scheme
22. Standard Investment Trust Funds
23. Watu Unit Trust Scheme
24. Zimele Unit Trust Scheme