FUND CHARACTERISTICS AND PERFORMANCE OF UNIT TRUSTS IN KENYA

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DECLARATION

This thesis is my original work and has not been presented for award in any other university. No part of this thesis should be reproduced without authority of the author or/and Kenyatta university.

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DEDICATION

This thesis is dedicated to my beloved wife Peris Nyambura, my children Jakes, Prudence and Sheryl. I also dedicate it to my parents Andrew Nthimba and Lydia Nthimba for educating me and to all my siblings. Your constant support, time and encouragement have contributed immensely to the success of this thesis. Thank you and God bless you abundantly.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

OPERATIONAL DEFINITIONS OF TERMS

Balanced Fund	A hybrid fund investing in both debt and equity securities.
Bond fund	Refers to a fund that invests predominantly in debt securities.
Equity	An ownership interest represented by a stock or any other security.
Equity Fund	A fund that invests predominantly in equity securities.
Fund	Refers to investment options available to the public where they can invest their money. In this study, a fund refers to bond fund, equity fund, balanced fund and money market fund.
Fund characteristics	Specific factors in a fund that the study hypothesizes as influencing the performance of unit trusts. They are operating expenses, fund size, systematic risk and unsystematic risk in the study.
Fund size	This is the smallness or bigness on a fund in terms of the amounts of money invested. Large funds have massive amounts invested while small funds have little amounts invested. In this study, it was measurement by Annual Total Asset.
Jensen Index	is an index that compares the performance of investment managers by allowing for portfolio risk. It uses the capital asset pricing model to determine whether a money manager outperformed a market index.

Market Index Is a performance measurement parameter for a specified basket of stocks or bonds representing a particular sector of the market, market or economy.

Money Market Fund A fund where investment is in fixed income securities that have a short investment duration and high credit quality.

Mutual Fund Is a multiple investor-pooled savings which is used to buy proportionate ownership units professionally managed. It consists of the funds.

Operating expense Refers to total costs incurred in running a fund within a given period.

Performance of Unit Trust funds Is the fund overall financial wellbeing during a specified period, and it appraises related funds. Jensen index was used in the study as the measure of unit trust fund performance.

Portfolio Combined holdings of stocks, bonds, or other securities and assets by an individual or entity. In unit trusts, investors know the portfolio before investing.

Systematic Risk Is the uncertainty influenced by factors affecting the overall financial market performance and which cannot be diversified away.

Unit trusts fund Refers to investment funds where pooled contributions purchase professionally managed financial securities. They are also known as mutual fund or collective investment scheme. They consist of money market funds, bond funds, balanced fund and equity fund

Unsystematic risk	It is the uncertainty inherent to the specific firm or industry arising from factors which are concerned with the firm and can be diversified.

ABBREVIATIONS AND ACRONYMS

ADF	Augmented Dickey Fuller
APT	Arbitrage Pricing Theory
BLUE	Best Linear Unbiased Estimators
CAPM	Capital Asset Pricing Model
CLRM	Classical Linear Regression Model
CMA	Capital Market Authority
CMF	Conventional Mutual Funds
FGLS	Feasible Generalised Least Square
GDP	Gross Domestic Product
ICI	Investment Company Institute
ICT	Information Communication Technology
IMF	Islamic mutual funds
KSHS	Kenya Shillings
MPT	Modern Portfolio Theory
NAV	Net Asset Value
NSE	Nairobi Stock Exchange
OLS	Ordinary Least Squares
PE	Private Equity
PP	Phillips-Perron
SEC	Securities and Exchange Commission
USA	United States of America
USD	United States Dollar
VIF	Variance Inflation Factor

ABSTRACT

When investors take part in any investment, increasing their wealth is the main objective. The objective is achieved when there is increase in share prices. The performance of unit trusts in Kenya however, has been poor compared to the counterparts in the rest of the world. The poor performance is a discouragement to individual and corporate investors in addition to affecting the realisation of financial stability according to the Kenya vision 2030. Empirical literature from developed and emerging markets posits that fund characteristics explain the unit trust funds performance. There is limited empirical literature in Kenya explaining the effects of fund characteristics on the performance of unit trust funds. The study therefore investigated the effects of fund characteristics on the performance of unit trust funds in Kenya. The specific objectives of the study were to: determine the effect of operating expenses on performance of unit trust funds in Kenya; the effect of fund size on performance of unit trust funds in Kenya: the effect of systematic risk on performance of unit trust funds in Kenya and the effect of unsystematic risk on performance of unit trust funds in Kenya. The study also sought to establish the moderating effect of inflation on the relationship between operating expenses, fund size, systematic risk, unsystematic risk and performance of unit trust funds in Kenya. The underpinning theories of the study were modern portfolio theory, arbitrage pricing theory, capital asset pricing model and Fama and French model. Positivism philosophy and explanatory research design and were adopted in the study. The population comprised 16 unit trusts with 99 equity funds, 107 money market funds, 85 bond funds and 100 balanced funds in Kenya as at the end of the year 2017. The study used a census approach. Secondary data was collected from the audited financial statement of respective unit trusts for the period 2005 to 2017 using a data collection schedule. Descriptive analysis done included the mean and standard deviation. Inferential statistics which included panel regression was also performed aided by e-views version 9. Diagnostic tests conducted included normality, heteroskedasticity, multicollinearity, stationarity and model specification. The study upheld issues relating to the ethical conduct of research by seeking permission from relevant authorities before collecting data. The study found that, operating expenses have a significant negative effect on performance in equity fund and money market fund and a significant positive effect on performance in bond fund and balanced fund. On fund size, the study found a significant positive effect on performance in all funds. Further, the study found systematic risk to have insignificant effect on performance in bond fund and balanced fund and significant effect on performance in equity fund and money market fund. In the unsystematic risk, the study found a significant effect on performance in the equity fund and money market fund. Besides, the study also found inflation rate to have a significant moderating effect on the relationship between fund characteristics and performance of unit trust funds in Kenya. The study concluded that: increase in operating expenses decreases performance; increase in fund size increases performance; increase in systematic risk increases performance and decrease in unsystematic risk increases performance. The study contributes to methodology, finance theory and empirical literature. The recommendations of the study the regulator should come up with a threshold for operating expenses within which unit trusts can charge based on various funds. There should also be policies regulating the amount of investment to be made for each fund in order to capitalise on the returns. The limitations underlined included: inadequate empirical evidence in Kenya; nonexistence of a unified ordering of accounting items.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The investment canon put forward by Goetzmann (2000) posits the earning of returns as the reason for investments by any investor. The desire for earnings in the future backs the motivation to invest and that the earning anticipated should be able to meet future cash needs (Marangu, 2015). Further, investors' motivation in investing anchors on the desire to increasing wealth and growing over time the initial investment. Investment returns compensate for the investment period, the inflation rate and the repayment uncertainty (Reilly & Brown, 2011).

An investment in unit trusts is an option for investors just like investing in shares and is prevalent amongst stockholders universally since it grants them a chance to receive earnings/proceeds (Goetzmann, Ravid & Sverdlove, 2012). Unit trusts offer investors a chance of earning yearly proceeds in the form of bonuses/dividends. It also serves as a basis for the long term and short term build-up of wealth resembling a savings account (Wilcox & Fabozzi, 2013, Badr, 2016). The objective of making investments in unit trust funds is earning dividend income or obtaining capital gains. Capital gains are realized when there is an increase in the price of a unit trust fund, or returns of a unit trust fund are positive during the holding period (Goetzmann *et al.*, 2012).

The unit trust market world over is worth approximately over USD 30 trillion in assets by 2015 (World Bank 2015). By 2017, the value of assets had increased to over USD 49 trillion. (ICI,2018). The distribution of the asset base world over does not favour Africa as shown in figure 1.1.

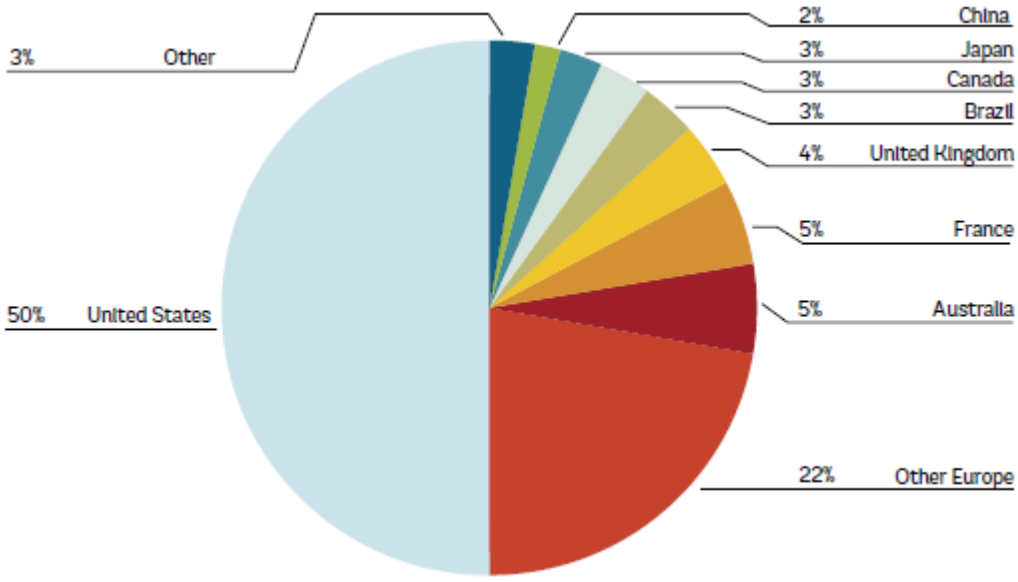

Figure1.1. Mutual Fund Asset Distribution by Country/Region
Source: ICI 2014

From figure 1.1, Africa and the rest of the world controls 3% of the entire market assets with the United States controlling 50% of the assets, Europe and other developed market control 47% share of the assets. This indicates that Africa and its constituent countries have a lot to do in order to substantially contribute to the market. It also implies that development, investment and performance of unit trusts in the region could be low.

Unit trust funds typically consist of four main types of funds defined by their asset exposure; funds that invest predominantly in equity securities are referred to as equity funds, funds that invest predominantly in debt securities and known as bond funds, funds that invest in a hybrid of both equity and debt securities are referred to as balanced funds and funds that invest in short-term debt instruments are commonly referred to as money market funds (world Bank, 2015). The Kenyan unit trust market is mainly dominated by the same four funds (CMA, 2017). This study considered 99 equity funds, 107 money

market funds, 85 ordinary funds and 100 balanced funds out of a total population of 16 unit trusts. (CMA, 2017)

Empirical literature on performance of unit trust funds in developing, emerging and developed capital markets presents mixed results. Some funds in these markets reported underperformance while others reported over performance. Bonolo, Beatrice and John (2017), Praven, Das and Uma (2013) and William (2010) reported weak performance or underperformance. Badr (2016), Halil (2015) and, See and Jusoh (2012) reported positive performance or outperformance of unit trust funds. This therefore shows that studies do not give a conclusive direction on the performance of unit trusts and investors are left in muddle.

For enhanced decision making, investors should be well versed with performance of individual unit trusts as well as the fund characteristics that influence performance of the unit trusts (Malhotra, Thenmozhi & Arunkumar, 2013). This study examined fund characteristics that drive the performance of unit trusts. Literature shows that the fund characteristics affecting the performance of unit trusts include; fund age (Blake & Morey, 2000, Samira & Slaheddine, 2011), size of fund (O'Neal & Page, 2000). Fund objective (Volkman & Woher, 1995), market risk (Grinblatt & Titman, 1992; Fama & French, 1992). Stock selectivity (Lintner, 1965), timing of the market (Mansour & Bhatti, 2011), total risk (Sharpe, 1966), time series (Kendall & Hill, 1953), administration costs (Khorana *et al.,* 2009), managers of the fund (Ali, 2012), recent past performance, fund age, fund growth (Samira & Slaheddine, 2011). This study assessed the effect of operating expenses, fund size, systematic risk and unsystematic risk on performance of

unit trust funds in Kenya. They characteristics in unit trusts were considered to be the most common and significant variables amongst the literature.

1.1.1 Fund Characteristics

Fund characteristics refer to specific factors or attributes in a fund that influence its performance. Characteristics of funds play an essential part in clarifying variances across unit trust funds performance (Gitagia, 2012). This study investigated the effect of operating expenses, fund size, systematic risk and unsystematic risk on the performance of unit trusts. These characteristics are considered by various authors to be the most common and significant variables influencing performance across literature. Investors inject more money to better performing funds and withdraw or avoid injecting more funds to poorly performing funds (Ainulashikin & Andrew, 2015).

Overall operating expenses comprise of annual administration charges to the fund administrators as well as different costs for trustee, legal, custody, audit and depository services. While high annual fees for management may make funds operating business more viable, they too dissuade investments, especially when a comparison is made with other contending investment options (World Bank 2015). Different scholars have varying opinions on the performance of unit trust funds and operating expenses. High costs have the effect of lowering the performance of a fund (Carhart, 1997). This argument is also supported by Gil-Bazo & Ruiz-Verdu, (2009), Dahlquist, Engstro¨m, & So¨derlind, (2000) and Otten & Bams, (2002). On the contrary, Chen *et al.*, (2004), Droms and Walker, (1994) and Grinblatt and Titman, (1989). Support a position of no connection between the performance of unit trust funds and operating expenses.

Generally, when a fund total costs as measured by the total annual operating expenses is high, investor returns become correspondingly lower (World Bank, 2015). However, high operating expenses may result to high profits, and low operating costs may lead to lower performance since high expenditures are assumed to be consistent with the large portfolio risk hence arising to higher returns (Ippolito, 1989; Droms & Walker, 1996; Malhotra & Mcleod, 1994). Yin-Ching and Mao-Wei (2003) and Philpot *et al.,* (1998), contradict this by arguing that mutual fund administrators are incapable of increasing portfolio returns through active management expenditure, i.e., activities of trading and analysis, market prediction efficiency etc, hence higher operating expenses results to lower yields.

Based on an asset-weighted basis, expense ratios incurred by fund investors, on average have dropped substantially over the years. During the year 2000, investors in equity fund had a per cent expense ratio average of 0.99; that is, 99 cents for every $100 invested was the expense. By the year 2017, the average expense ratio had fallen to 0.59 per cent, a drop of 40 per cent. Ordinary hybrid mutual fund ratio of expense reduced from 0.89 per cent to 0.70 per cent in years 2000 to 2017, representing a reduction of 21 per cent. Additionally, bond mutual fund ratio of expense had fallen from 0.76 per cent to 0.48 per cent between the year 2000 and 2017, a 37 per cent decline (ICI, 2018). Fund operating expense is a paramount component of any fund; on one hand, it provides revenue to the management of the funds. In addition, on the other hand, it deters investments by investors. Based on this background, the researcher seeks to establish operating expense effect on the performance of unit trusts in Kenya.

large funds present a wide spread for fixed expenses, more resources for research, better opportunities of investment that are not available to smaller funds in addition to

negotiating improved ranges due to more prominent positions and trading capacities (Brennan & Hughes, 1991). However, large funds experience particular difficulties in administration and persistence performance (Berk & Green, 2004; Gruber, 1996). Funds with massive amounts experience deteriorating performance since investment avenues diminish (Berk & Green, 2004). Low operating expenses funds and small funds outdo in performance their corresponding in the category of bond fund (Yin-Ching & Hung, 2003). Smaller funds focus on a small number of investment options, but when they become large, administrators need to continue finding better opportunities for investment; in effect, diseconomies of scale end up diluting the managerial skills (Berk & Green, 2004).

Empirical studies across the various markets in the world do not agree on the effect of fund size on the performance of unit trust funds. For instance, there was shrinking of returns with respect to scale for funds invested in the USA and a contrary position for funds located outside the USA (Chen, Hong, Huang & Kubick, 2004). Cremers and Petajisto (2009) showed smaller funds to be more active. Grinblatt and Titman (1989, 1994) held evidence of a mixed relationship between fund size and fund returns. Besides, once a fund obtains inflows, there is a tendency of increasing its positions as opposed to diversification into newer assets (Pollet & Wilson, 2008).

Yan (2008) and Edelen, Evans, and Kadlec (2007) pointed out the primary sources of diseconomies of scale in USA funds to be costs of trading and liquefication. Compared to smaller equity funds, more substantial equity funds are inclined to performing more poorly outside the USA (Dahlquist, Engstro¨m, & So¨derlind, 2000). Generally, size-performance evidence isn't undivided. Current studies appear to be in support of the

presence of diseconomies of scale. The reviews are, to a great extent obtained from developed markets, and it is paramount to make findings of fund size-performance effect in emerging markets as well as Kenya in particular. The size of unit trust industry has been increasing in the world across. In 2012, the total net assets in the sector amounted to United States Dollar (USD) 32 trillion and by 2017 had grown to USD 49 trillion with the USA and Europe, contributing the highest share (ICI, 2018). In Kenya, the net asset value of the industry grew over the period to USD 558 million in 2017. (CMA, 2017)

Systematic risk facet refers to market/system - businesses interdependence touching the entire market index or industry rather than separate companies as individuals (Horcher, 2005; James, 2008). Systematic risks are risks which affect the entire market (Kazi, 2004). These risks are not diversifiable within a particular market. Systematic risks include factors which contribute to un-diversifiable risks in financial market (Barnor, 2014). These risk factors cannot be eliminated or reduced by diversification of portfolio holding within a certain market. This is because they are inherent in all securities in a certain market (Granger, Yang, & Huang, 2000). Investors know that they cannot avert this type of risk by simply holding many different securities. Systematic risk factors affect the whole market and are usually beyond the influence of individual companies (Erdugan, 2012).

According to Badr (2016), systematic risk is the most significant independent variable affecting Jensen alpha, Treynor ratio and Sharpe ratio and explains 73percent, 69percent and 50percent, respectively of the dependent variable. In Egypt, Asran (2004) noted less total risk degree in open-ended than closed-ended mutual funds under changing returns of the securities market

Considerations of market risk are more when evaluating the performance of unit trust funds than other factor-related determinants of fund flows. There is an indication that, overall, investors deliberate on market risk more when evaluating a fund's performance than other factors (Barber, Huang and Odean, 2016). Beta coefficient measures systematic risk as determined by way of dividing fund return, and market portfolio return variance by market portfolio return variance for the period of study (Miller, 2001).

The beta coefficient shows the variation of fund return comparative to the entire market index. The market index usually captures the systematic risk exposure. The market index supposedly ought to provide a beta value of one. A fund that has a beta value less than one means that, the fund price is moving in a smaller frequency than the market index. Additionally, the reverse is also true for a beta higher than one. A fund with a beta value that is high expects to provide supplementary earnings since the additional systematic risk is not captured by the market index (Copeland, Weston and Shastri, 2005; Hull, 2009; Brealey, Myers and Allen, 2008).

More commonly portfolio of funds with high risk earns high returns as projected by CAPM (Badr, 2016). In contrast, the collection of lesser funds seems to be more risky; hence larger funds generally possess lower risk owing to increased diversification (Droms & Walker 1995). Increase in market risk decreases the performance of the firm (Namesake, 2016). In the USA market, risk is measured by the Volatility Index, which tracks the S&P 500 index. Values exceeding 30 reflect a high degree of fear by the investor while values below 20 are associated with a calm market. For the year 2017, the average daily volatility index was a low of 11, with the highest index at 16 in mid-August (ICI, 2018). To the best of the author’s knowledge, there is no index tracking the

performance of unit trusts in Kenya. Hence the NSE 20 index and 91 day Treasury bill were adopted in the calculation of the beta. With the increase in exchange rates, inflation rate changes coupled with other macro-economic issues in Kenya, the systematic risk has been growing moderately over the period to the year 2015 (CBK Report, 2015)

Unsystematic risk is the condition of insufficient knowledge; in which decision-making subject is cognizant of different probable consequences of its choices and can approximate the degree of probability that this or other results will occur (Buganova, & Hudakova, 2012). The total of unsystematic risk is determined by the likelihood and adverse consequences that stem from the phenomenon occurrence (Klucka, 2006). Kiseľáková, Horváthová, Šofranková and Štefko, (2015) examined unsystematic risk from the perspective of financial risk represented by current ratio, the business risk represented by return on assets, liquidity risk represented by equity and economic structure risk represented by interest coverage. Total risk less systematic risk was adopted to calculate the unsystematic risk in this study. Kiseľáková *et al.*, (2015) confirmed unsystematic risk to have a more significant effect on enterprise performance similar to systematic risk and hence justifies the need for conducting this study to establish unsystematic risk effects on the performance of unit trusts in Kenya.

1.1.2 Inflation

Inflation is the general rise in price levels (Mishkin, 2011). During inflation periods there is a general increase in the amount of money in supply enabling investors to have more money to offer for goods. Varga (2005) indicates that inflation rates affect the intrinsic value of stock prices and as a consequence, their desirability based of investors wealth maximization. Najarzadeh, Khondabi and Rezaeepour (2009) argued of significant

equilibrium long-term relationship concerning inflation rate and stock price index in the Tehran Stock Exchange. Inflation rate harm long term stock prices index and a favorable effect in the short term. The impact of shocks occasioning from inflation rate on the real return of stocks, however, is stronger than that attributed to the exchange rate. Mashayekh and HajiMoradkhani (2009) pointed to a positive association of inflation rate in the long-run to the Tehran Stock Exchange variables. After using one-year bank deposits interest rate as the index of guaranteed interest rate, a significant and inverse association was observed contrary to using the interest rate of securities as an index of guaranteed interest rate which yielded positive and considerable relationship.

Sajjadi *et al.,* (2010) observed long-term positive relationship amongst growth rate of cash return index of stock and price of inflation when establishing relationship amongst growth rate of stock - cash return index in the long-term and macroeconomic variables like money supply, growth rate, inflation rate, oil revenues and exchange rate. Sultani and Karimzadeh (2010) posit long-run connection concerning stock prices index of financial intermediation industry and macroeconomic variables of money. Singh, Mehta and Varsha (2011) argue of a negative relationship with stock return and macroeconomic factors such as inflation on returns of medium and large companies' portfolios. These studies are relevant to the study in that they are pointers of how inflation is likely to affect the performance of unit trusts. In Kenya, the inflation rate has been fluctuating over the years with 2011 and 2012 having the highest yearly average, 2014 and 2015 had reasonably low stable rates while 2016 and 2017, had rates rising steadily (CBK report 2017). Global inflation dropped sharply between 1970 and 2000. It has been low since then averaging 6.5 per cent, a trend shared by all measures of inflation (World Bank 2018). This study adopted inflation rate as a moderating variable on the relationship

between operating expenses, fund size, systematic risk, unsystematic risk and the performance of unit trust funds in Kenya.

1.1.3 Performance of Unit Trust Funds

Performance of unit trust fund is the overall evaluation of a fund based on a predetermined procedure and gauges its wellbeing in the market. Performance usually indicates the returns of an investment and provides confidence for further investments into the market by new investors or withdrawal from the market by existing investors (Patra & Poshakwale, 2006). Typically, investors select funds based on partial performance, although sensitivity may be due to variances of past performance. Many studies suggest that conventional investors react by directing more cash to better performing funds and not the same way to inadequately performing funds (Ainulashikin & Andrew, 2015). Performance in the market solely determines the survival of the fund, that is, a persistent increase in capital gains for growth funds and constant returns for value funds. (Gitagia, 2012). Maina, (2013) asserts evaluation of unit trust funds performance in terms of capital growth, periodical returns in the form of dividends, interest received, capital gains and Net Asset Value.

In Kenya, like other countries, many investors are dependent on unit trust funds as vehicles of investment (Maina 2013). The unit trust market is greatly unexploited in Kenya and research on their performance is significantly deficient (Gitagia 2012). Assortment measures of performance have been used all through the literature to assess the performance of the funds. The commonly used measures are; Jensen Alpha, Treynor ratio and Sharpe ratio, (Ali, 2012; Badr, 2016; Samira & Slaheddine, 2011). Non-risk-adjusted measures such as fund return formulas, portfolio return formulas and Lower

Partial Moment Capital Asset Pricing Model have also been used (Badr, 2016; Samira & Slaheddine, 2011). This study measured the performance of unit trust funds using Jensen Alpha. The ratio is the most used across literature in assessing risk-adjusted returns of unit trusts.

Examination on some of the unit trust funds shows that there is a trend of deteriorating performance. For example, Old Mutual equity fund generated a loss in 2015 and 2016 of Kenya shillings (Kshs) 74,982,000 and 227,225,000, respectively. Equity fund had a decrease in profits in the year 2016 of 16.3 per cent from the previous year 2015. The balanced fund had a loss of Kshs 27,552,000 in 2015 (Old Mutual Financial Report, 2016). The Britam, equity fund had deteriorating profits from 2013 culminating into losses of Kshs 140,288,000 and 386,942,000 in the years 2016 and 2015 respectively(Britam Financial Report, 2016). Cooperative insurance company funds, among others, exhibit a similar trend which indicates a gap for investigation.

1.1.4 Unit Trust Funds in Kenya

Unit trust funds are a set of financial securities carefully chosen to meet the specified group of potential investors' objectives (Ali, 2012). The potential investors, in addition to lacking enough financial resources to construct a portfolio they also lack expertise, knowledge and time required in managing the portfolio (Mohammed, 2016). Participants are shareholders who take up equity securities of the unit trust (Wilson, 2010). Unit trusts accord investors opportunities of investing in a well-diversified portfolio without them assuming the risk of managing the portfolio (Bhatti, 2009).

In developed markets, for example, United States of America (USA), the growth of mutual fund has been noteworthy over the past several years with the global Gross Domestic Product (GDP) growing to 36 per cent by the year 2014 (ICI, 2018). Plantier (2015), asserts that the USA market established total cumulative capital inflows of approximately USD 10 trillion over the period 2000 - 2014. The largest mutual fund industry in the world with over USD17.8 trillion in assets and accounting for more than half of the $33.4 trillion of assets value is USA (ICI, 2014; Fredrik, Han-Suck Song & Mats, 2015)

Africa, when combined with Asia pacific, accounts for 3 per cent of total world assets and is among the lowest in the world (ICI, 2014). The unit trust industry in Kenya accounts for 0.80 per cent of Kenyans GDP (World Bank, 2015). In addition, the total assets amount to USD 558 million (CMA, 2017). Since its inception, there are a total of 20 registered unit trusts firms (CMA, 2017). Central to the stock market performance of any country is the listed firms' financial performance in the economy at large (Maina & Sakwa, 2012). Nairobi Securities Exchange (NSE) listed firms performance has been meager (Ngugi, Amanja & Maina, 2009). Makori (2017) posits that, some of the listed firms at the NSE are not only in unhealthy financial position but in addition, they have suffered financial decline and Capital Markets Authority (CMA) has delisted them. The fall, in return, affects the performance of unit trusts since NSE provides an investment platform for unit trust funds.

According to the Republic of Kenya, (2007), the vision 2030 financial services aims to raise savings and investment rates from 17 per cent to 30 per cent of Kenya's GDP and raise stock market capitalization from 50 per cent to 90 per cent of GDP. However, nine

years later, the unit trust industry contributes 0.80 per cent of the Kenyans GDP (World Bank, 2015). The unit trusts in Kenya is mainly dominated by four core funds which include; money market, equity, bond and balanced funds (CMA 2017).

1.2 Statement of the Problem

The unit trust markets in many countries are driving their economies in an upward trajectory. The Kenyan unit trust market on the other hand has continued to experience poor performance with some funds reporting a stream of losses from one year to another (Old mutual, 2015, 2016, Britam, 2015, 2016, Cooperative insurance company, 2015, 2016). Weak performance trends of unit trusts in Kenya are a discouragement to individual and corporate investors in addition to hindering the realization of vision 2030. Kenya's unit trust industry contributes an equivalent of 0.80 per cent of the country's GDP (World Bank, 2015).

Countries that started unit trusts the same time with Kenya in early 2000 have grown substantially in terms of the amount invested. Such countries include Morocco, whose total value is USD 26.65 billion, Peru with an overall net worth of over USD 6.1 billion and Turkey, valued at more than USD 16 billion. Kenya, on the other hand, has a total value of USD 275.3 million (World Bank, 2015) and a value of USD 558 million in 2017 (CMA, 2017). The Kenyan case shows low growth. This can be attributed to poor performance in the sector and is a concern to the country, investors and other stakeholders. In addition, it reflects lack of understanding of the market by the investors or the fund managers are not doing enough to woo investors (Batra, Laxmi, and Gupta, 2012). The dismal performance also leads to loss of confidence and erosion of investors' wealth in the unit trust (Marangu, 2015).

On the relationship of fund characteristics and performance of unit trusts, studies have shown mixed results. For instance, Gil-Bazo and Ruiz-Verdu (2009); Carhart (1997); Ippolito (1989) and Chen *et al.,* (2004) found a positive connection amongst expense ratios and mutual fund performance. Droms and Walker (1994) and Grinblatt and Titman (1989), established a negative relationship. Ferreira, Miguel and Romans (2006) found no relationship at all amongst expenses and performance of unit trusts. There is no clear documentation in the studies on a particular link between the performance of unit trust funds and fund characteristics.

Studies carried out in Kenya have not extensively addressed the connection between performance of unit trusts and the characteristics of the funds. For instance, Kagunda (2011) concentrated on net asset value and dividend paid by equity unit trust funds, Kasanga (2011) focused only on equity and money market funds, Njeri (2012) examined the challenges faced by unit trusts, Shikuku (2012) focused on behavior elements on making investment decision by unit trusts. Gachoka (2013) focused only on equity fund in a single year period, Mihari (2014) measured performance using a Likert scale and used primary data, Nyanamba, Muturi and Nyang' au (2015) examined one year period in their study. Hence none of the studies addressed the most common unit trust funds together. The period scope of the studies was also short, hence not appropriate to form a meaningful basis for generalizing conclusions to the entire sector.

Discrepancies in findings on the same subject, in consequence, stirred the present study. The current study not only explored the direct effect of fund characteristics on performance of unit trust funds using panel data for thirteen years but, also investigated

the moderation effect of inflation on the relationship between fund characteristics and performance of unit trusts in Kenya. Therefore, the study takes a rounded approach in evaluating the outcome of fund characteristics on the performance of unit trusts.

1.3 Research Objectives

The general and specific objectives guiding the study are captured here under:

1.3.1 General Objective

The general objective of the study was to investigate the effect of fund characteristics on the performance of unit trust funds in Kenya.

1.3.2 Specific Objectives

The study was guided by the following specific objectives:

i) To determine the effect of operating expenses on the performance of unit trust funds in Kenya.
ii) To establish the effect of fund size on the performance of unit trust funds in Kenya
iii) To determine the effect of systematic risk on the performance of unit trust funds in Kenya.
iv) To determine the effect of unsystematic risk on the performance of unit trust funds in Kenya.
v) To establish the moderating effect of inflation on the relationship between operating expenses, fund size, systematic risk, unsystematic risk and performance of unit trusts in Kenya.

1.4 Research Hypotheses

The null hypotheses tested in the study were:

H_{01}: Operating expenses have no significant effect on the performance of unit trust funds in Kenya.

H_{02}: Fund size has no significant effect on the performance of unit trust funds in Kenya.

H_{03}: Systematic risk has no significant effect on the performance of unit trust funds in Kenya

H_{04}: Unsystematic risk has no significant effect on the performance of unit trust funds in Kenya.

H_{05}: Inflation has no significant moderating effect on the relationship between operating expenses, fund size, systematic risk, unsystematic risk and performance of unit trust funds in Kenya.

1.5 Significance of the Study

The purpose of the study was to present empirical evidence on the effect of fund characteristics on the performance of unit trusts in Kenya. The study adds to the existing body of knowledge on MPT, APT, CAPM and Fama and French model. These theories have been used mainly in investment and corporate finance. The research findings contribute to both theoretical and empirical literature to researchers wishing to carry out further research on the effects of fund characteristics on the performance of unit trust funds in Kenya.

The research findings provide value to the unit trust investment management, specifically to the managers of funds and unit trust firms as well as to investors in relation to investment and decision making. The findings of the study enhance understanding of the contributions of each component of fund characteristics. Also, the study arguments the

effect of inflation on the relationship between fund characteristics and performance of unit trust funds in Kenya. Policy recommendations from the study expound on the fund characteristics components that should be subject to austerity measures as well as ones to be enhanced. Lastly, the study recommends investment indicators that investors should focus on in order to avoid instances of losing their investments.

1.6 Scope of the Study

The study focused on four fund characteristics namely; operating expenses, fund size, systematic risk and unsystematic risk on the performance of unit trusts in Kenya on 16 licensed firms (appendix I); with an analysis of how inflation moderates the relationship. These four characteristics are justified because they are regarded to have a more significant influence on unit trust funds performance. The period of study was 13 years; that is from 2005 to 2017. The choice of this window period was sufficient to capture the relationship between fund characteristics and performance of the unit trust funds since inception in Kenya. The period is justified as it provides a wide span for the study on the performance of unit trust funds as well as giving a more extensive base for anchoring generalization for the industry. Collection of data was at the head offices of unit trusts in Nairobi Kenya for all unit trusts that have been in existence during this period.

1.7 Organization of the Study

The study is organized as follows; chapter one address the background of the study, statement of the problem, the objectives of the study, research hypotheses, scope of the research and significance of the study in that sequence. Chapter two reviews the theoretical and empirical literature on the study topic, identifies the research gaps and presents the conceptual framework. The third chapter outlines the research methodology

utilized to achieve the objectives of the study. Chapter four presents the study findings while chapter five gives the summary, conclusion and recommendations of the study

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The chapter focuses mainly on three key sections. First, the chapter gives an overview of models and theories anchoring the study variables. Second, the chapter explores empirical literature explaining fund characteristics and performance of unit trusts. The findings of empirical studies bring out the empirical summary and research gap. Lastly the conceptual framework captures the relationship between fund characteristics and performance of unit trusts.

2.2 Theoretical Literature

This section discusses theoretical literature that forms the basis explaining the relationships between the independent and dependent variables. Saunders et.al (2007) explains that a theory is a statement which is supported by evidence meant to explain some phenomenon. The underpinning theories of this study are; Modern Portfolio Theory (MPT), Arbitrage Pricing Theory (APT), Capital Asset Pricing Model (CAPM) and Fama and French Model

2.2.1 Modern Portfolio Theory

Modern portfolio theory (MPT) is attributed to Markowitz (1952). The theory postulates that a knowledgeable but rational investor in uncertainty conditions is likely to make a portfolio selection. MPT makes the assumption that, investors are risk-averse, meaning they prefer a less risky portfolio to a more risky one for a given level of return and only take more risk if he or she is expecting more reward (Pfaff, 2012). Tobin (1958) further extended MPT by illustrating that by accessing risk-free instruments, investors may

likewise combine the riskless assets with risky assets to obtain an optimum-efficient portfolio.

Elton and Gruber (1997) argued that an investment's risk and return characteristics should not be viewed alone, but should be evaluated by how the investment affects the overall portfolio's risk and return. Mansor and Bhatti (2011) contend that, investors' interest is only on risk and returns in the selected portfolio securities and that there are unlimited assortments of assets at the investors' disposal every time they intend to diversify hence enabling the realization of an optimum portfolio. Based on the argument of MPT investors taking investments with higher systematic and unsystematic risk would be more likely to receive better returns compared to counter parts taking lower risks investments (Badr, 2016). Better performing unit trust funds are able to judiciously select investment portfolio that balance between the risk and return (Markowitz, 1991). Unit trust firms should contemplate spreading their portfolio of investment in order to augment their unsystematic risk. MPT therefore underpins the study by explaining why some investors (fund managers as well as contributors of funds) may decide to take more risky investment while other investors opt for lower risk investment.

2.2.2 Arbitrage Pricing Theory

The proponent of Arbitrage Pricing Theory (APT) is Ross (1976) and was an extension of capital asset pricing model (CAPM). This theory has been very instrumental in asset pricing because, unlike CAPM which suggested that asset prices are determined by one single common factor, Arbitrage Pricing theory advocates that shares prices are driven by many factors (Kazi, 2004).The APT theory was mainly developed due to the dissatisfaction of CAPM and was fronted as an alternative to pricing of assets. CAPM

having been derived from the first principles of expected utility theory. Ross (1976) indicates that the assumptions underlying expected utility theory made no use of common variability.

APT is a factor model which includes multiple factors that represent the fundamental risk in asset returns. The model being a multi factor allows an asset to have several measures of systematic risk. Each of the measure captures the important sensitivity of an asset to a specific factor. Multifactor asset pricing models are based on APT and they evaluate a multifactor equilibrium in scenarios where there are many sources of risk other than the market factor (Erdugan, 2012).This reasoning is consistent with modern financial theory which has focused with systematic effects as the most likely sources of risk affecting a portfolio performance. APT opines that returns on securities are linearly related to small number k-systematic factors rather than a single factor. APT does not stipulate what the k-factors are. This has been left open for researchers to use as many factors as possible, based on the uniqueness of the markets that they are studying.

Ross (1976) explained that APT incorporates multiple factors that represent the fundamental risk in asset returns. The model being a multi factor allows an asset to have several measures of systematic risks which are represented by macro-economic variables in the determination of asset price. Each of the measure captures the important sensitivity of an asset to a specific factor. This model has been widely accepted because it allows researchers to capture most systematic risk variables. The study used the theory to test the effect of systematic risk on the performance of unit trust funds in Kenya. The APT hypothesizes the performance of securities to the market beta. This theory is relevant to

this study because it explains the performance of unit trust funds in relation to the whole market.

2.2.3 Capital Asset Pricing Model

The proponents of Capital Asset Pricing Model (CAPM) were Sharpe (1964), Lintner (1965), and Mossin (1966). CAPM was a basic technique used to determine risk and performance related to a particular security. This theory was an equilibrium model which underlies all modern financial theories and heavily relied on the concept of Markowitz portfolio theory. CAPM emphasized the principles of diversification so as to create an efficient portfolio.

Sharpe made several assumptions as he came up with the theory. Firstly the theory assumes that all investors are price takers. Lintner (1973) contends that in an efficient market with informed buyers and suppliers, no individual player can influence the price in the market, but rather adapts to the price already arrived by the competitive forces in the market. The theory also assumes a single period investment horizon, implying that investors only intend to hold the security in the current period only and are not interested in what happens afterwards in the subsequent periods (Lee & Rui, 2002). Sharpe also assures that investors can borrow or lend any amount of finances at a fixed risk free rate and that investments are limited to only publicly traded financial assets, such as stocks and bonds. Sharpe (1964) opined that investors pay no taxes on returns and no transactions cost incurred on traders when buying and selling these securities. The theory further argued all investors are rational mean variance optimizers.

Friend and Blume (1970) explores the portfolio theory by measuring performance under conditions of uncertainty by testing the CAPM. Their findings were that Sharpe, Treynor and Jensen one-parameter of portfolio performance was very biased. This is due to the fact that the estimates were grossly biased and the magnitudes of the estimates bias were related to portfolio risk (Jensen, 1968). The study found that several studies of mutual fund performance based on one parameter measures, causes significant variations when compared to the market performance as a whole. The cause of the variances was attributed to the one parameter measure of portfolio risk. CAPM explains the asset sensitivity to non-diversifiable risk in addition to the expected return of the market and the expected return of the risk-free asset. Using the measure of uncertainty as beta, CAPM then redefines anticipated performance in terms of the expected risk premium and the risk-free rate. An asset paying a risk-free rate is the hypothetical risk-free asset and is the short-term government securities, e.g., treasury bills in practice. They have a fixed rate of interest and have low default risk hence is used as a risk-free asset. The risk-free asset returns variance is zero; therefore, uncorrelated with any other asset. The resulting change in return is linearly related to the change in risk when combined with any other asset or portfolio of assets, as the proportion combinations vary (Charles, 2001).

Merton (1992) contradicted sharpe (1964) single period assumption by envisioning that investors optimize a lifetime consumption plan. Short (1979) argued that the reduction of the associated risk per individual assets (specific risk) within a portfolio is through diversification. Market risk /Systematic risk/Portfolio risk is the risk common to all securities, which is not diversifiable within one market. Asset specific risk can be diversified away within the market portfolio to the extent possible. Consequently, systematic risk is equal to the standard deviation, the market portfolio risk. Within one

market, management of systematic risks can be through the use of both short and long positions strategy in one portfolio (Wood, Smith & Staikouras, 2003). CAPM underpins the study because it explains the concept of un-diversifiable risk in unit trust funds investment. This study sought to establish the effect of systematic risk and performance of unit trust funds over several periods as explained by Merton (1992) that investors adopt a lifetime consumption plan.

2.2.4 Fama and French Model

This model was designed by Fama and French in 1992 to describe stock returns. The model focuses on size of firms, book-to-market values and excess return on the market. The model contends that, small firms can receive reliably higher average returns than more significant firms. Similarly, a big book to market ratio firms earns higher returns than counterpart firms with low book to market ratio (Fama & French, 1993). The Fama and French model embrace the view that asset returns are not only affected by the market factor. Liquidity risks influence asset prices, with investors demanding a higher return on less liquid assets. Bahl (2006) contend that, the explanatory power of the 3 factor model better captures the variation in common stock returns than the CAPM. Badr (2016) argued that, the explanatory power of the 3 factor model over the variation in common stock returns was more precise than the CAPM in capturing the variation in common stock returns. The Fama and French model underpins the study because it explains the aspect of size in performance of unit trust funds.

2.2.5 The Keynesian Theory

This theory was developed by John Maynard Keynes (1936). Keynes's ideas referred to as Keynesianism became very influential to economic policy after great depression.

Keynes explained that an increase in the general price level or inflation is caused by an increase in aggregate demand which is above the aggregate supply. Keynes argues that if the economy is at full output level, an increase in government expenditure, private consumption and a rise in private investment will cause a rise aggregate demand (Reddy, 2012). The rise in aggregate demand leads to a general increase in price levels. Ifionu (2015) explains that, inflation pressure is due to the fact that at full employment of output and with maximum utilization of scarce resources, an economy cannot increase its aggregate supply to match the increasing aggregate demand.

There is empirical evidence about Keynesian propositions on the inter-relations between money supply, policy actions and interest rates for the IS-LM framework and the stock market activities (Kuwornu, 2012).Changes in Inflation levels and Money supply are intertwined and they all affect the purchasing power of investors. This has an effect on the activity on their stock markets because stock markets acts as agents of adjusting planned consumption with the current information available. Varga (2005) explains that inflation rates affect the intrinsic value of stock prices and as a consequence their desirability is based on investors' wealth maximization. The theory is applied in this study's context because it explains the moderation effect of inflation on the relationship between fund characteristics and performance of unit trust funds in Kenya. Shocks in Inflation are correlated with the movements of stock prices because inflation rate has an effect on the expected real return of investors.

2.3 Empirical Literature Review

This section reviews studies on fund characteristics and performance of unit trust funds.

2.3.1 Operating expenses and performance of unit trust funds

Ainulashikin and Andrew (2015) studied performance-related fund flows for Malaysian Islamic and convectional equity funds. The authors using panel regression models estimated the association between fund flows and performance for Islamic and conventional equity funds in Malaysia from 2001 to 2009. The study found that higher management expenses attract more money flows with a meaningful positive connection between fund flows and fund expenses. These findings are contrary to part of the literature that fundamentally settle on investors purchasing funds with lower expense ratio (Ersin, Hassan & Turhan, 2015; Ombongi, 2014; Nyanamba, Muturi & Nyangau, 2015), but they agree with Halil (2015). The current study extended the works of Ainulashikin and Andrew (2015) by adopting a panel regression methodology and focused on all unit trust funds.

Ersin, Hassan, and Turhan (2015) analysed growth affecting factors in pension mutual funds of Turkey for the period January 2006 to September 2013. The real growth rate was the dependent variable. The study used Panel data methodology in the analysis. The finding was that, operating expenses did not have a statistically significant effect on growth rate of the mutual funds. The study, however, assumed a direct connection between the dependent variable and independent variables. The dependent variable, Growth; is likely to be moderated by other factors contrast to what the authors presumed. The current study addresses this gap by introducing a moderating variable; inflation between the variables. The study findings contradict those by Halil (2015). The current research sought to establish the results. The study was carried out in Turkey which is a developed market with different economic factors different from the Kenyan market.

Halil (2015) assessed Chinese mutual funds for the period 2000 to 2013. The study used risk-adjusted measures on fund performance and made a comparison of performances between subgroups of mutual funds. A cross-sectional analysis was adopted using Sharpe and Jensen's indices for dependent variables. The results showed funds with higher fees to be better performing than the rest of the funds. The Chinese market has a unique characteristic of speedy development in relation to other developed markets. The Kenyan marketplace is an emerging market; on the other hand, this study shall extend Halil's works. The study, however, did not consider a moderation effect between the dependent and independent variables. The current research utilized inflation rate as a moderation variable between dependent and independent variables.

Nyanamba, Muturi, and Nyang'au (2015) investigated factors affecting mutual funds profitability in Kenya. A descriptive approach was adopted to analyse 19 unit trusts for the period ended in 2014, utilizing secondary data. The study established a negative relationship between expenses and fund profitability. Nyanamba, Muturi, and Nyang'au based their work on a single period, and this snapshot is not sufficient enough to make conclusions for the entire industry. The current study conducted a census of the unit trust funds. Data was collected for the period 2005 to 2017 in order to have a rich basis of generalizing results. The findings on expenses and performance contradict Halil (2015) findings but agree with Ersin, Hassan & Turhan (2015). This finding presents a gap that the current study sought to establish. Besides, profitability as a measure of performance is biased because it does not take into consideration the risk aspect of the investment. The performance of unit trust funds in current study was centred on a risk-adjusted measure by Jensen, which is the most commonly used across the literature.

Ombongi (2014) analysed financial performance determinants of unit trusts in Kenya. The study used regression analysis on performance against independent variables. The performance was proxied in terms of the Jensen index. The study found out that operating expenses have no effect on fund performance in unit trusts. The findings on operating expenses are in agreement with Ersin, Hassan, and Turhan (2015) and contradict Halil (2015). These results pose a gap that the current study sought to redress. The survey by Ombongi also assumed a linear relationship between the variables, which in reality, isn't the case. The current study addressed this by moderating the relationship between independent and dependent variables.

Mbataru (2012) investigated performance factors of unit trusts in Kenya between the periods 2008 - 2011. The study's focus was on money markets, equity, and balanced funds. Jensen Alpha was used in performance analysis. The study found expenses to have no influence on performance. These findings are in agreement with Ombongi (2014); Ersin, Hassan, and Turhan (2015) but contradict Halil (2015). This study concentrated only on three types of funds over a four year period, which is not adequate for generalizing the findings to the entire industry. The current research focussed on the major four funds over thirteen years to anchor a better basis for the generalization of results.

William (2010) investigated the performance of high bond yield funds using risk-adjusted measures of performance, and measured over time Performance persistence. The study found out that the expense ratio was not suitable in accounting for variance in excess return through funds to the tune of 86 per cent. The findings are in agreement with Ersin, Hassan, and Turhan (2015); Ombongi (2014); Mbataru (2012) but contradict Halil

(2015). This difference in findings presents a gap that the current study investigated. The current study extended the work by William (2010) and in addition considered inflation as a moderating variable in the relationship between the variables.

2.3.2 Fund Size and performance of unit trust funds

Ainulashikin and Andrew (2015) conducted a study on Malaysian Islamic and conventional equity funds performance. The study used panel regression models in the assessment of the relationship between fund flows and performance from 2001 to 2009. Findings showed fund size to have a significantly negative effect in explaining fund flows, signifying that smaller funds attract a generally more significant percentage of fund flows. These findings are in contradiction with Maina (2013), and Norma, Saad, Shabri, Majid, Salina, Zarinah and Rosylin (2010), who held a positive relationship position. The differences in findings created a gap that the current study sought to establish. The present research adopted a panel regression methodology, and the focus was on all unit trust funds.

Ombongi (2014) analysed the financial performance of determinants in Kenyan unit trusts. The study utilized regression analysis on performance and established the size of the fund to be a critical performance determinant in unit trusts. The findings on size do not give the direction of impact on unit trust funds performance in Kenya. However, results are in agreement with Norma *et al.,* (2010) that size is a crucial factor influencing the performance of unit trusts. The current study sought to establish the performance of unit trust funds and the size with a view of clarifying the direction-if positive or negative. The survey by Ombongi (2014) also assumed a linear relationship between the variables.

The current study introduced a moderating variable and extended the work of Ombongi (2014) by proxying financial performance in terms of the Jensen index.

Maina (2013) studied portfolio characteristics effects on the financial performance of unit trusts in Kenya using Fama and French and later Cahart multi-factor model. Using descriptive analysis and a population of 14 unit trusts that were equity-based funds in Kenya for the period 2008 to 2012. The findings established a strong positive relationship between fund size and fund returns. Financial performance was proxied as expected return less the risk-free rate and focusing on equity funds only. The findings on fund size and performance were in agreement with previous conclusions by Ombongi (2014) and Norma *et al.,* (2010). The size was proxied as return on the portfolio of small-capitalization stocks or asset size minus the return to a portfolio of large-capitalization stocks or asset size. The proxy used was not explicit. The current study used annual total assets. On the performance of unit trust funds, the present study used Jensen index since it is the most commonly used measure of performance for unit trusts in literature across. Besides, the current research not only focused on equity funds but also on money market funds, bond funds, and balanced funds for the period 2005 - 2017.

Mbataru (2012) investigated performance factors of unit trusts in Kenya in the periods 2008 - 2011. The money markets, equity, and balanced funds were the focus of the study. Using Jensen Alpha as a proxy for performance, the study found out that fund size has no influence on fund performance. These findings are in contradiction to Maina (2013), who established a positive relationship between size and performance. This study concentrated on only three types of funds over a four year period which is not adequate for generalizing the findings to the entire industry. The current research focused on four

funds for thirteen years to anchor a better basis for the generalization of results. It also sought to establish the connection of fund size on performance over a longer time.

See and Jusoh (2012) studied fund performance and fund characteristics in Malaysian funds using regression analysis. The study found no significant relationship between fund size and fund performance. The findings are in contradiction with findings by Ainulashikin and Andrew (2015), Ombongi (2014), Maina (2013) but agree with Mbataru (2012). This inconsistence presented a gap that the current study investigated. The performance was proxied in terms of the Jensen ratio. The current study extended the works by See and Josuh (2012) in the Kenyan market by adopting Jensen index as a measure of fund performance.

Samira and Slaheddine (2011) assessed the Tunisian performance of mutual funds using a dynamic panel data model. The study established a significant positive influence on performance by fund size for all categories of funds irrespective of performance measure used. The positive and significant effect of fund size suggests that more substantial funds earn higher adjusted-risk returns due to the economies of scale. The findings are coherent with the finding by Ainulashikin and Andrew (2015), Ombongi (2014), Maina (2013) but differ with those by See and Josuh (2012) and Mbataru (2012). The performance was proxied in terms of Jensen index and LPM-CAPM. The current study adopted the Jensen index as the measure of fund performance. The study by Samira and Slaheddine assumed a linear connection between the variables but the current study examined a moderation effect of inflation rate on the relationship between the variables.

Norma *et al.,* (2010) analysed the performance of Islamic and conventional unit trust companies in Malaysia. Investigation on efficiency was done over the period 2002 – 2005 using panel regression and DEA approach. The study found out that, the bigger the size of the unit trust company, the more inefficient the performance was. Performance was examined from the efficiency perspective in the study. The current study examined performance from the risk adjusted perspective using Jensen index. In addition, the study assumed a linear association between the variables. The current research addressed the moderation effect on the relationship between the variables.

2.3.3 Systematic Risk and performance of unit trust funds

Galla (2017), using a sample of US equity mutual funds for the period 1999 to 2012, analysed the business cycle and investment flows of retail and institutional mutual funds. The researcher performed separate analyses during expansion and recession periods for each type of fund. The author found out that the flow patterns of both fund types varied across the business cycle. Furthermore, the study observed that, during economic downturns, investors of both fund types tended to punish managers with higher market exposure, and during expansions, the fund's market exposure positively affected the flow of institutional funds, while its effect on the flow of retail funds remained negative. Galla (2017) presumes a linear relationship between the variables, but the current study introduced a moderating variable to the relationship between the variables. Besides, the current study examined systematic risk from the performance of unit trust funds and not from the business cycle.

Badr (2016). assessed investment funds performance in Egypt in 2006 - 2013. Using Sharpe, Jensen, and Treynor, risk-adjusted indices, the results of the multiple regressions

found a significant effect of systematic risk on mutual fund performance. Systematic risk was examined from the point of view of pre-financial and post financial crisis phases. Egypt, has different political, economic, and social structures compared to Kenya in addition to having extreme scenario of financial crisis. Kenya has had no severe financial crisis, and the current study sought to find the effect of systematic risks in such an environment.

Ainulashikin and Andrew (2015) investigated equity funds performance-related flows in Malaysia. Panel regression models were used to estimate the association between fund flows and performance from 2001 - 2009. Findings showed a significant positive relationship between risk and fund flow in the common effects model. The focus of the research was only on equity funds, and this may not form an adequate ground to generalize the results to other funds. The current study focussed on four major unit trust funds as a better ground for basing the generalization of the results. See and Josuh (2012) studied fund performance and fund characteristics in Malaysia using regression analysis. The study found out that, higher risk funds provide higher returns. The performance was proxied in terms of the Jensen ratio only. This study extended the works in the Kenyan market. Additionally, the study adopted the Jensen index to examine the performance of unit trusts.

2.3.4 Unsystematic Risk and performance of unit trust funds

Drosos and Spyros (2017) studied Domestic equity funds during the financial crisis period 2012 - 2016 in Greece. The researcher utilized a Survivorship-bias controlled sample of 25 funds. Using the Jensen index besides multi-factor models to calculate risk-adjusted returns using Athens Stock Exchange general index as a benchmark, the findings

of the study were that funds underperformed the index mainly due to managers' market timing inability. Greece has different economic and political factors from those in Kenya. The research focussed on only equity funds but the current study examined the four major funds in Kenya. The current study in addition extended the work by Drosos and Spyros (2017) in Kenya by adopting risk-adjusted measure of performance. Unsystematic risk was viewed in totality and not on the basis of specific components in the firm.

Bonolo, Beatrice, and John (2017) analysed the performance of equity unit trusts in South Africa over 2006 to 2016 period. Analysis of 191 equity unit trusts capturing market different conditions using cross-sectional regression and non-parametric rank correlation tests for performance persistence by unit trusts. Henriksson-Merton model and Treynor-Mazuy model were employed to test if portfolio managers have a stock selection and market timing ability. Weak evidence of stock selection, as well as market timing ability, were shown in the findings. Moreover, the study reported insignificant coefficients in most of the unit trusts. On performance persistence using Sharpe Ratio and the Sortino ratio, overall results revealed weak evidence of persistence. The current study used the Jensen index in examining the unsystematic risk effect on the performance of the unit trusts. Unsystematic risk shall be considered in totality and not based on specific aspects of the internal environment. Also, the present study examined the relationship between the variables by moderating it.

Praveen, Uma and Das (2013) evaluated socially responsible mutual fund performance using style analysis. The purpose was to examine funds' investment styles. William Sharpe's method of style analysis was performed on 94 US socially responsible mutual funds using fund style as a benchmark. Observation of underperformance by socially

responsible funds was more pronounced and typical than identified in the previous literature was established. The study also found active management of mutual funds to be a vital determinant of their performance. Management is an aspect controlled within the firm and hence an element of unsystematic risk. The current study focussed on unsystematic risk in totality without examining particular issues of the firm.

Gachoka (2013) examined investment strategies of private equity funds on the financial performance in Kenya. By the use of descriptive analysis, the study found out that, leveraged buyouts as an investment strategy had a significant positive effect on performance in private equity funds and venture capital. The focus of the study was only on private equity fund and investment strategies, which were a narrow scope. Further, the study utilized data collected for a single period of time from which findings cannot be reliably generalized for the entire industry. The current research focussed on four funds in twenty unit trusts for thirteen years.

Gitagia (2012) investigated fund performance fundamentals in Kenya using a descriptive survey and established that investment style and managerial capabilities have a positive relationship with fund performance. Investment style and managerial capabilities are factors within the firm and influence the unsystematic risk hence better studied as one variable which the current study did. The study also was based on a single period, yet performance is bound to change considerably over some time; consequently, time-series would have been appropriate. The current study focussed on a panel study for the period 2005 to 2017 as a firm basis for generalizing. Additionally, the study investigated the effect of inflation rate as a moderating variable on the relationship between the variables.

2.3.5 Inflation and performance of unit trust funds

Lemantile (2017) studied macro-economic factor effects on mutual funds' financial performance in Kenya. The researcher examined the inflation effect on the financial performance of mutual funds using a descriptive survey design methodology for the period 2011 and 2016. The study used secondary data from seven-unit trusts, and the findings revealed that inflation has a negative relationship with mutual fund performance. Inflation in the study was an independent variable. However, inflation has the effect of lowering the purchasing power of money, and as such, the negative impact on the financial performance of any investment is predictable. The current study adopts inflation as a moderating variable on the relationship between fund characteristics and performance of unit trust funds. Similarly, the study period was five years, and data collected from only seven-unit trusts. This basis may not form a strong background to generalize the findings on other funds. The current study overcame this by using panel data for all the funds from 2005 to 2017.

Mohammadreza and Esmaeel (2013) assessed economic factor-effects on the efficiency of Iranian mutual funds. Using panel data, the researcher established a significant positive relationship between inflation rate and fund return. The study examined inflation rate as an independent variable but the current study examined the moderation effect of inflation on the relationship between fund characteristics and performance of unit trust funds. The study took place in Iran, a market that is more developed than Kenya.

2.4 Summary of Literature and Research Gaps

Table 2.1 Summary of Literature and Research Gaps

Author	Purpose/Objective	Methodology	Key Findings	Research gap and how it is addressed
Drosos and Spyros (2017)	studied Domestic equity funds during financial crisis period 2012 - 2016 in Greece	Linear regression model	• The underperformance of the general index by funds primarily due to market timing inability by managers.	• The focus of the study was only on equity funds. The current research focuses on various funds.
Galla (2017)	Examined Business cycle and investment flows of retail and institutional mutual funds	Cross-sectional regression	• Both fund types of Flow patterns vary across the business cycle. • In economic downturns, both fund types punished managers with higher market exposure.	• Presumes a linear relationship between the variables but the current study introduces a moderating variable to the connection amongst dependent and independent variables • Examines systematic risk from business cycle but the present study looked at systematic risk from the performance of unit trust funds

			• During expansions, market exposure positively affected flows	
Bonolo, Beatrice and John (2017)	analysed performance of equity unit trusts in South Africa	non-parametric rank correlation and Cross-sectional regression	• Evidence of stock selection and market timing ability was weak.	• Unsystematic risk examined from management ability to select stocks and market timing ability. In the current study, unsystematic risk was considered in totality and not based on specific aspects of the internal environment. • The current study also examined the moderating relationship amongst the variables, an aspect that is not addressed by Bonolo, Beatrice, and John.
Lemantile (2017)	study macro-economic factor effects on mutual funds financial performance in Kenya	Descriptive survey design	• Inflation had a negative relationship with mutual fund performance.	• Inflation was an independent variable in the study but was used as a moderating variable in the current study. • Similarly study period was five years, and data collected from only seven funds. The scope

				may not form a strong background to generalize the findings on other funds. The current study overcame this by using panel data for all the funds from 2005 to 2017.
Badr (2016).	Assessed financial performance of investment funds in Egypt for the period 2006 – 2013	Multiple linear regression	• Performance of Islamic mutual funds does not significantly differ with conventional mutual fund performance	• The study conducted in Egypt, which different economic factors from Kenya. Financial performance was proxied by Jensen alpha, Sharpe, and Treynor ratio. The current study extended the works of Badr in Kenya. • The study, however, takes on a linear association between the variables. The current study addressed this gap by bringing in a moderating variable in the relationship.
Ersin, Hassan & Turhan (2015)	analysed growth affecting factors in pension mutual funds of Turkey	Panel data methodology	• The independent variables are statistically significant on the real GR of the stock pension mutual funds apart from operating	• The study performed in a developed market with a different economic environment from the Kenyan market. • The growth rate was proxied in terms of growth in assets only. The current study examined performance in terms of risk-adjusted measure.

			expenses	
Nyanamba, Muturi & Nyang'au (2015)	investigated factors affecting mutual funds profitability in Kenya	Multiple linear regression	• profitability is positively affected by assets, liquidity, and liabilities of mutual funds • A negative connection exists between expenses and profitability	• The performance was looked at from the profitability perspective only. Still, this study brought the adjusted risk measures, which give a better view of performance in the unit trust industry. • Basis of analysis and conclusion was on a single period of study, which is a snapshot. This gap was addressed by examining a thirteen years period.
Ainulashikin and Andrew (2015)	Studied performance related fund flows for Malaysian Islamic and conventional equity funds.	panel regression models	• Islamic and conventional fund investors respond to performance in the same way, and fund size is significantly negative • Higher management expenses attract more money flows with a	• Findings contradict Ombongi (2014), Maina (2013), and Norma *et al.*,. (2010), who hold a favourable relationship position. The differences in findings create a gap that the current study sought to establish.

			significant positive connection amongst fund expenses and fund flows.	
Halil (2015)	Assessed performance evaluation of mutual funds in Chinese in the period 2000 to 2013	cross-sectional analysis	• Chinese funds generate positive αs for their investors. • There was better performance in older funds, funds with higher fees, a high price to book ratio, and smaller funds than others.	• The study considers a linear relationship between the dependent variable and the independent variable. The current research assumed that inflation has a moderation effect on study variables. • The country of the study was China, which has different political, economic, and financial conditions from the Kenyan market, which is an emerging market.
Ombongi (2014)	Analysed of financial performance determinants in Kenyan unit trusts.	Multiple regression	• Fund size is a critical determinant of performance	• There was an assumption of a linear relationship between the variables, but the current study examined the moderating effect of inflation between the variables.
Mohammadrez	Assess economic factor	Panel	• The relationship	• This study assumed a linear association

a and Esmaeel (2013),	effects on the efficiency of Iranian mutual funds	regression	between fund return, the exchange rate, and the inflation rate were significantly positive. • Fund assets and fund age had a Positive relationship with fund return.	between variables, but the current study established the moderation effect of inflation rate on fund characteristics and performance of unit trusts in Kenya. • The research was carried out in Iran, a developed market as compared to the Kenyan market, which is an emerging market.
Gachoka (2013)	Examined investment strategies of private equity funds on the financial performance in Kenya	descriptive analysis	• leveraged buyouts as an investment strategy had an effect that was positive and significant on the performance of PE funds • Reported a significant positive impact on venture capital as an	• Focused only on private equity fund and investment strategies. The scope was addressed by examining the four funds in unit trusts to give a more comprehensive analysis. • Data collected for a single period in the study, which is a snapshot and not adequate to generalize the results to other funds. The current study addressed this gap by examining the periods 2005 to 2017.

			investment strategy and the return of PE funds.	
Maina (2013)	Studied portfolio characteristics effects on financial performance of unit trusts in Kenya	Multiple linear regression analysis	• performance and size showed Positive relationship • There was a statistically significant effect on fund performance by operation risks, transaction costs, and fund size.	• This research investigated on size of the unit trusts. The current study adopted size as a variable that affect the performance of unit trusts. • Maina (2013) proxied performance in terms of ROA only. It is not an adequate measure, especially in unit trusts. The current study addressed this gap by proxying performance in terms of Jensen alpha. • A moderating variable was included to address the gap of linear association between variables.
Monjazeb and Ramazanpour (2013)	Examination of economic factors on the efficiency of mutual funds in Iran.	Panel data analysis	• Exchange rate and inflation rate have a significant positive relationship with fund return	• In the study, the inflation rate was used as an independent variable • The survey carried out in Iran • The current study used inflation rate as a moderating variable and in Kenya

			• Fund return has a positive relationship with fund assets and fund age.	
Praveen Uma, and Das (2013)	Evaluated socially responsible mutual fund performance	style analysis	• There was more significant Underperformance of socially responsible funds • Active management reported being a key determinant of performance.	• The unsystematic risk was examined from the Management ability. The current study examined unsystematic risk in totality without examining particular aspects of the firm. • The current study also used panel regression analysis since data had both cross-sectional and time-series components.
Mbataru (2012)	Investigated factors affecting performance of unit trusts in Kenya in the periods 2008 - 2011	Linear regression	• The critical determinant of performance was the Growth of funds. • There was no influence on performance by the	• Findings are in contradiction to Maina (2013), who established a positive relationship between size and performance hence creating a gap that the current study sought to investigate. • This study concentrated only on three types of funds over a four year period, which was not

			age of fund, expense ratio, initial investment amount, and fund size.	adequate for generalizing the findings to the entire industry. The current research focussed on four funds for thirteen years to have a better basis for the generalization of results.
Gitagia (2012)	Fundamentals that predict mutual fund performance a case of fund managers in Kenya	Descriptive survey	• Fund performance had a positive connection with fund characteristics, investment style, the persistence of returns, and managerial capabilities. • A negative relationship existed amongst behavioural patterns and fund performance.	• Fund characteristics were examined as one variable, but the current study broke fund characteristics into four variables for indebt inquiry on their effect on performance of unit trust funds. • Further, performance was proxied in terms of risk-adjusted measure in the current study and not in terms of profitability.
See and Jusoh (2012)	Studied fund performance and fund characteristics in	Regression analysis	• Higher risk funds provide higher returns	• The performance was proxied in terms of the Jensen ratio which was also adopted in the current study.

	Malaysia		• Fund performance has no significant connection with turnover ratios and fund size.	• Research assumed a linear relationship amongst the variables, but the current study considers a moderating effect between the variables.
Samira and Slaheddine (2011).	Assessed Tunisian performance of mutual fund	Panel regression	• The study reported positive and significant influence by past performance and fund size on future performance for all fund categories, irrespective of measure used. • Fund characteristics explain performance with varying impact among fund categories.	• There was an assumption of linearity amongst the variables, but the current study examined the moderating effect of inflation on the variables.

Norma *et al.*, (2010).	Analysed performance of Malaysian Islamic and conventional unit trust companies	Comparative panel analysis	• Technical efficiency reported as the primary contributor to performance • Inefficient in performance. Was associated with the size	• The focus was more on the comparative aspect of Islamic and general funds. Still, the current study examined all unit trust funds. • A linear relationship was assumed amongst the variables but current study examined the moderation effect.
William (2010)	Investigated high yield bond fund by analysing the risk-adjusted performance	Multiple linear regression	• High yield bond funds underperformed the high yield index significantly • Risk-adjusted excess return differences across funds not explained by expense ratio	• The study focused only on one type of fund-bond fund, the current study investigated four types of funds • A linear relationship was assumed amongst variables, but the present study incorporated a moderating variable in the relationship between the variables.

Source: Researcher (2020)

2.5 Conceptual Frame Work

The framework defines the researcher's conceptualization and interactions concerning the study variables. The conceptual framework graphical representation for this study is as in Figure 2.1.

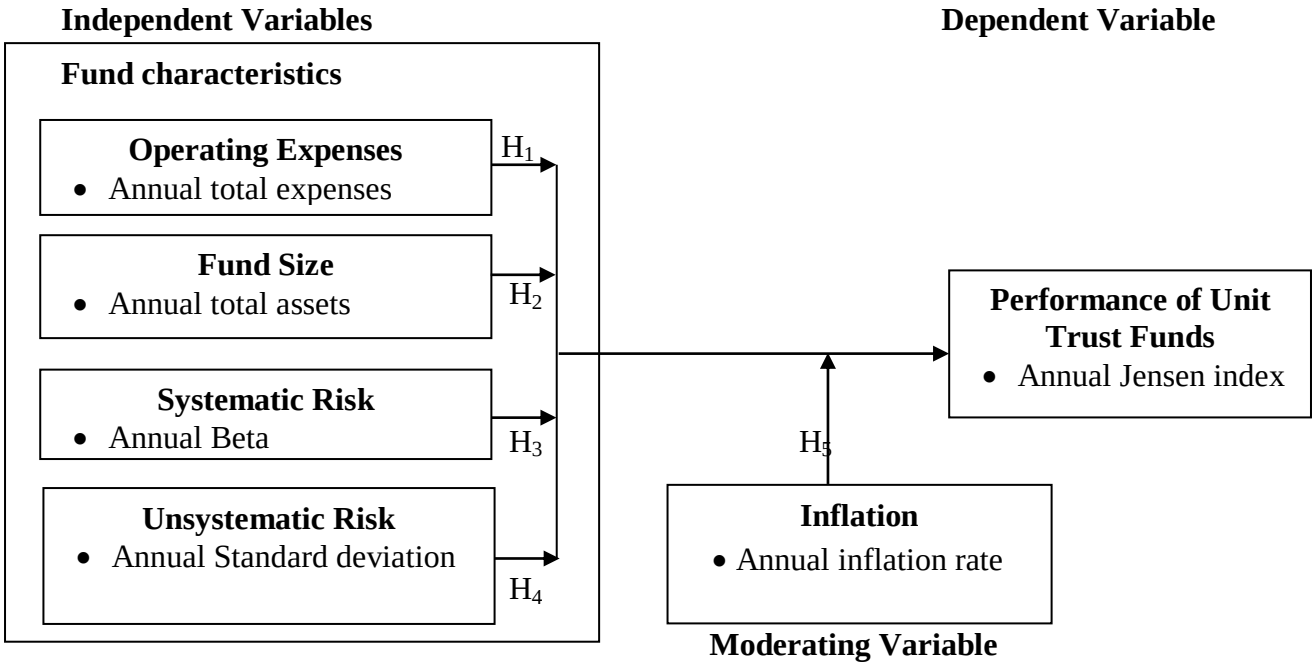

Figure 2.1 Conceptual Framework

Source: Researcher (2020)

From figure 2.1, fund characteristics are theorized to have effect on the performance of unit trusts. The independent variable, that is fund characteristics, is broken down into operating expenses, fund size, systematic risk, and unsystematic risk. The study tested the effect of each component of fund characteristic on the dependent variable that is, performance of unit trusts proxied by the Jensen index. Inflation checks the relationship between each component of fund characteristics and performance of unit trusts. Inflation was measured by the inflation rate per year.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter discusses the research methodology used by the study. The focus is mainly on the research philosophy, research design, target population of the study, data collection procedure, data collection instruments and data analysis. The chapter begins by briefly exploring the research philosophy and design and justifies why they were chosen for this study. Further, it expounds on the diagnostic tests carried out as precursor to empirical modelling. Also Captured in the chapter is the empirical model as well as operationalization of research variables. Finally the chapter highlights ethical considerations that guided the study.

3.2 Research Philosophy

Research philosophy refers to knowledge development with the nature of the knowledge, including predisposition and compelling suppositions around people's opinions about the world (Saunders, Lewis & Thornhill, 2007). The research philosophy adopted informs the collecting, analysing, and applying data about an occurrence. The main research philosophies in social sciences are phenomenology and positivism (Coopers & Schindler, 2004). Positivism philosophy assumes events of interest and world environment are external, objective, and independent of the researcher (Carson, Gilmore, Perry & Gronhaug, 2001). As an epistemological position, Positivism generally informs quantitative research by advocating for the application of procedures of the natural sciences to the study of social reality and beyond (Bryman & Bell, 2003). The advantage of a positivistic stance towards research is that it eliminates the researchers' personal

opinions. The researcher accepts observable objects as knowledge, and the focus is on the causality (Saunders *et al.,* 2009).

This research considers positivism philosophy to be the most appropriate because the study looks at the connection between fund characteristics and performance of unit trusts in Kenya. The event and environment of interest are objective, independent, and external of the researcher (Bryman & Bell, 2003). Subjective interpretations of results based on numbers have the minimal possibility (Bryman & Bell, 2011). The researcher intends to gather and scrutinize data impartially by using already existing statistics and formulae. The approach and nature taken when conducting research reflect the philosophy and research methodology (Saunders *et al.,* 2009). Remenyi (1996) posits that the emphasis within positivism is on statistical analysis on quantifiable observations.

3.3 Research Design

Every research undertaking must have an overall strategy that a researcher chooses to integrate different components of the study in an articulate and logical way, thereby, ensuring that it will effectively address the research problem (Saunders *et al.,* 2008). It constitutes the blueprint for the collection, measurement and analysis of data. This study sought to determine the effect of fund characteristics on the performance of unit trusts in Kenya and this primarily entailed the use of quantitative data to test the proposed hypotheses. A Non-experimental explanatory research design was adopted in this study. Explanatory research design establishes a causal association amongst variables (Saunders *et al.,* 2009*).* It is a systematic inquiry wherein a researcher does not have direct control over the independent variables since their manifestations have already happened (Robson, 2002). Explanatory design is ideal where a study endeavours to

clarify how phenomena function by finding the fundamental elements that bring change and in which case there is no manipulation of the independent variable (Kerlinger & Lee, 2000). Non-experimental design is an orderly practical enquiry where there is no express authority over the explanatory variables by investigators since symptoms happened in the past (Kerlinger & Lee, 2000). In this case, fund characteristics as the predictor variable was varied to establish the variation in the criterion variable, performance of unit trusts.

3.4 Empirical Model

Analysis of the effects of fund characteristics on the performance of unit trust funds employed a panel regression model since the data had both cross-sectional and time-series dimensions as put forward by Greene (2008). Panel Data Analysis is more advantageous than time-series or cross-sectional alone since the researcher allowed to account for unobservable heterogeneity Mwangi *et al.*, (2014). Balgati (2005) argued that using panel data makes it possible to obtain a larger sample size that is more variable and less collinear among the variables than with either cross-section or time series alone. It is likely to test more complicated behavioural models and more reliable estimates with less limiting assumptions because of the expanded and more informative data. Also, Panel data sets are better able to recognize and estimate the effects that cannot be detected merely in pure cross-sections or pure time-series data (Mwangi *et al.*, 2014).

The general empirical model to be used in the study is as below:

$$Y_{it} = \beta_0 + \beta X'_{it} + \varepsilon_{it} \quad \text{..... (3.1)}$$

Where: Y_{it} is the dependent variable denoting performance of unit trust funds *i* at time *t*

i is the observation (unit trusts), i = 1, ……, 16

t is time period, t = 2005, …, 2017;

X'_{it} is the independent variables vector,

β is coefficients to be predictable,

β_0 is the constant term,

ε_{it} is the error term.

3.4.1 Direct Effect Model

Equation 3.1 is expanded to obtain equations 3.2a to 3.2d for estimating the study variables for equity fund, money market fund, bond fund and balanced fund respectfully.

Fund Performance $=\beta_0 + \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \mu_i + u_{it}$ …… *(3.2a)*

Fund Performance $=\beta_0 + \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \mu_i + u_{it}$ …… *(3.2b)*

Fund Performance $=\beta_0 + \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \mu_i + u_{it}$ …… *(3.2c)*

Fund Performance $=\beta_0 + \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \mu_i + u_{it}$ …… *(3.2d)*

Where,

Fund Performance is the performance of each unit trust fund measured by Jensen Alpha model.

FS is the size of the unit trust fund.

OE is the unit trust fund operating expense.

SR is unit trust fund systematic risk (measured with Beta).

USR is unit trust fund Unsystematic risk

$\boldsymbol{\beta_0}$ is the constant term

$\boldsymbol{\beta_1}$….. $\boldsymbol{\beta_5}$ represents coefficients of the explanatory variables

i = represents firms (cross-sectional dimension) ranging from1 to 20

t = represents years (time series dimension) ranging from 2005 to 2017

μ_i = is Individual fund effect

u_{it} = Is idiosyncratic error term

3.4.2 Moderating Effect of Inflation on the Relationship between Fund Characteristics and Performance of Unit Trust Funds in Kenya.

The Whisman and McClelland (2005) test for the moderation effect of inflation on the relationship between fund characteristics and performance of unit trusts in Kenya was adopted in this research. The model proposes two main stages. First, inflation in a particular year is introduced in model 3.2a to 3.2d as a variable as shown in equation 3.3a to 3.3d for equity fund, money market fund, bond fund and balanced fund respectively below

Fund Performance $=\beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \mu_i + u_{it}$ ... *(3.3a)*

Fund Performance $=\beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \mu_i + u_{it}$ ... *(3.3b)*

Fund Performance $=\beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \mu_i + u_{it}$ ... *(3.3c)*

Fund Performance $=\beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \mu_i + u_{it}$ ... *(3.3d)*

Where IR_t in the inflation rate in year t.

Secondly, inflation is introduced as a moderator as shown in equation 3.4a to 3.4d for equity fund, money market fund, bond fund and balanced fund respectivefully below:

Fund Performance $= \beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \beta_6 [OE_{it} * InIR_t] + \beta_7 [FS_{it} * InIR_t] + \beta_8 [SR_{it} * InIR_t] + \beta_9 [USR_{it} * InIR_t] + \mu_i + u_{it}$ ..... *(3.4a)*

Fund Performance $= \beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \beta_6 [OE_{it} * InIR_t] + \beta_7 [FS_{it} * InIR_t] + \beta_8 [SR_{it} * InIR_t] + \beta_9 [USR_{it} * InIR_t] + \mu_i + u_{it}$ ..... *(3.4b)*

Fund Performance $= \beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \beta_6 [OE_{it} * InIR_t] + \beta_7 [FS_{it} * InIR_t] + \beta_8 [SR_{it} * InIR_t] + \beta_9 [USR_{it} * InIR_t] + \mu_i + u_{it}$ ..... *(3.4c)*

Fund Performance $= \beta_0+ \beta_1 OE_{it} + \beta_2 FS_{it} + \beta_3 SR_{it} + \beta_4 USR_{it} + \beta_5 1nIR_t + \beta_6 [OE_{it} * InIR_t] + \beta_7 [FS_{it} * InIR_t] + \beta_8 [SR_{it} * InIR_t] + \beta_9 [USR_{it} * InIR_t] + \mu_i + u_{it}$ ..... *(3.4d)*

The following states may occur given equations 3.3 and 3.4 above,

Table 3.1: Moderation Decision Making Criteria

States	Model 3.3	Model 3.4	Conclusion
One	β_5 is significant	β_6 - β_9 are insignificant	Moderating variable is an explanatory variable
two	β_5 is insignificant	β_6 - β_9 are significant	Moderating variable has a moderating effect

Source: Whisman and McClelland (2005)

Table 3.1 above shows the two possible states that may occur after introducing inflation as a variable as well as a moderator. When situation one occurs, then inflation is an explanatory variable rather than a moderator. If situation two occurs, then inflation is a moderator.

3.5 Operationalization and Measurement of Study Variables

Measures to be adopted have been used and validated by other researchers such as shown in table 3.2.

Table 3.2: Operationalization and Measurement of Study Variables

Category	Variable	Operationalization	Measurement	Scale of Measurement
Dependent Variable	Fund Performance	Funds overall financial wellbeing during a specified measured by Jensen alpha	Jensen alpha $\alpha_i = \frac{\beta_i[E(\tilde{R}_m) - R_f]}{E(\tilde{R}_i) - R_f}$	Ratio
Independent Variable	Operating Expenses	Costs incurred to operate a fund for a	Total Expenses	Ratio

		given year		
	Fund Size	The smallness or bigness on a fund in terms of the total assets at the end of the year.	Total assets of the fund in a period	Ratio
	Systematic Risk	Tendency of an investment's return to respond to movements in the market	$\boldsymbol{B_i} = \boldsymbol{Cov}\ (\boldsymbol{X_i}, \boldsymbol{X_m}) / \boldsymbol{\delta_m}$	Ratio
	Unsystematic Risk	The risk inherent within the firm or industry	Total risk less systematic risk	Ratio
Moderating Variable	Inflation	Sustained increase in general price levels for goods and services	Percentage (Annual Inflation Rate)	Ratio

Source: Researcher (2020)

3.6 Target Population

A researcher should choose a target population or a whole collection of persons or things concerned for generalizing the conclusions on (Sekara, 2003). The target population for this study was the 16 unit trusts in Kenya. These are the unit trusts that were registered by CMA by this period and data was available. From the 16 unit trusts, data was available in 99 equity funds, 107 money market funds, 85 bond funds and 100 balanced funds. Attached (Appendix I) is listing of all funds included in the unit trusts for the duration under study. This study adopted a census of all the 16 unit trusts.

3.7 Data Collection Instrument

The tool for collecting data should be examined critically to check the extent to which it is likely to yield the expected results (Godfred, 2016). Construct validity in secondary data is achieved through literature review as proposed by Zikmund, Babin and Griffin (2009). The measurement and operationalization of variables in addition to development of data extraction tool are informed by various literature reviewed. Attached in Appendix II is the data extraction tool adopted for this study.

3.8 Data Collection Procedure

The study utilized secondary panel data from the audited financial statements of unit trust funds namely; the income statement, statement of financial statement and the notes to the accounts for the years 2005 to 2017. The data collected from these reports included profit and loss, total operating expenses and total assets for each fund. The need to combine data in two dimensions informed the choice of this data type. The rationale behind this is that panel data gives more data variation, less collinearity and more degrees of freedom (Baltagi, 2005). Data on moderating variable vary over time but constant cross-sectionally. Data on inflation was collected from the Kenya bureau of statistics reports. NSE 20 index and the Treasury bill rates were obtained from various economic survey reports. The data collected was recorded in the data collection schedule in Appendix II and cleaned aptly.

3.9 Data Analysis and Presentation

From the secondary data extracted, ratios computed were as defined in Table 3.2 after conducting data clean up. The study obtained descriptive statistics and inferential statistics from the panel data. Descriptive statistics analysis determined measures of

central tendencies that is (the mean) and measures of dispersion (standard deviation, minimum and maximum values). Inferential statistics included correlation and panel regression analysis. E-views 9.0 software was used to support the analysis of the panel data. Excel worksheets were used to compute the relevant ratios for each fund for the period under study based on data extracted from the financial statements and other sources. Before data was exported was exported to E-views software from excel worksheets, it was arranged in E-views format. The justification for use of E-views is that, it has the capacity to work with panel data.

3.10 Diagnostic Tests

Diagnostics performed before approximating equation 3.2a through 3.2d ensured non-violation of the Classical Linear Regression Model (CLRM) assumptions. There would be a possibility of getting subjective, inefficient and contradictory parameter estimates by approximating the regression equations without correcting the contraventions if any (Brooks, 2008). Violation of regression assumptions lead to biased regression estimates (Gujarati, 2003).The diagnostics carried out to ensure compliance with the assumptions included tests of normality, heteroscedasticity, test for multicollinearity, test for stationarity, and test for model specification.

3.10.1 Normality Tests

Normality assumption is necessary to conduct single or joint hypothesis tests about the model parameters (Brooks, 2008). This thesis used Bera and Jarque (1981) criteria for normality. The null hypothesis in this test stated that the error terms are not normally distributed. The rejection of the null hypothesis was when the P-value is less than 5 per

cent level of significance. The data that was not normally distributed was converted into logarithms to make it normal.

3.10.2 Heteroscedasticity

From the cross-section of firms, data obtained introduces concerns about the presence of heteroscedasticity. CLRM assumes that the error variance is constant, and this is homoscedastic. When the error variance is not constant, there is the presence of heteroscedasticity in the data. Estimating a regression model without accounting for heteroscedasticity would lead to an impartial parameter estimate (Brooks, 2008). The study tested for panel-level heteroscedasticity using the Likelihood Ratio (LR) test proposed by Wiggins and Poi (2001). The null hypothesis in this test stated that error variance is homoscedastic. Therefore $p>0.05$ implies that the study fails to reject the null hypothesis while $p<0.05$ implied the study rejects the null hypothesis. If the errors terms were found to be heteroscedastic then FGLS model was to be adopted by the study as recommended by (Cooper & Schendler, 2008) and (Mwangi *et al.*, 2014).

3.10.3 Multicollinearity

Multicollinearity occurs if two or more independent variables in a regression model are highly correlated inferring that one can linearly predict the other with some degree of accuracy (Wooldridge, 2002). Regression model ran in the presence of multicollinearity has the effect of attaining individual coefficients that have high standard errors and the regression model becomes very sensitive to small changes in the specification (Brooks, 2008). Multicollinearity was tested in the study using the correlation matrix. The cut-off point for severe multicollinearity was 0.8 (Gujarati, 2003; Cooper & Schindler, 2008; Mwangi *et al.*, 2014).

3.10.4 Stationarity

Cross-sections and time series components of the data necessitate test for stationarity. The grounding of times series evaluation is on the assumption of stationary variables. Estimating models without consideration for the non-stationary character of the data would end in sham results (Gujarati, 2003). If stationarity in the data is present and not checked, the existence of a trend in the data series would indicate that the regression results are spurious (Tsay, 2001). Panel unit root test can either be common for all the cross-sections or be individual (Levin, Lin, & Chu, 2002). Individual panel unit root tests, test stationarity for each series for a given Sector. Common panel unit root test gives the analysis of stationarity for the pooled irrespective of the Sectors involved. Since the interest of the study was efficient estimators, the research conducted both individual and common unit root tests. Im *et al.,* (2003) and PP-Fisher Chi-square test are chosen over the others because they are suitable for a dataset that has many panels, N almost equal to the number of periods. Levin *et al.,* (2002) are used for common unit root test while Im *et al.,* (2003) and PP-Fisher Chi-square for individual unit root tests. The null hypothesis is stationarity indicates the absence of unit root while the alternative is non-stationarity suggests the presence of unit root. In cases where any of the variables are found to have a unit root then the study would adopt differencing and fit regression models using differenced variables (Molonko, 2017; Kimtai, 2018).

3.10.5 Model Specification Test

Panel data analysis requires one to determine whether to run a fixed effects model or random-effects model. Fixed effect model presumes firm-specific intercepts and captures effects of those variables which are specific to each firm and constant over time. On the contrary, the random effect model assumes there is a single common intercept which is

different from firm to firm in an arbitrary manner (Baltagi, 2005). Hence to estimate the regression equations, it is paramount to establish if there exists a correlation between the explanatory variables. When a relationship exists, the fixed-effect model would be ideal for providing reliable results or else random effect model would be an efficient estimator (Garcia-Teruel & Martinez-Solano, 2007).

The study used Hausman's specification test (1978) to decide whether fixed or random effect model is suitable. The analysis establishes whether there is a significant relationship between the unnoticed firm-specific random effects and the regressors. If such a connection is not present, then the random effects could be more appropriate. When there is a presence of such a relationship, however, the random-effects model would be contradictorily approximated, and the fixed effects model would be most appropriate (Greene, 2008). The study null hypothesis was; variance across the entities is zero denoting that there are no panel effects. When the Hausman test rejects the null hypothesis, random effects would be a proficient estimator or else in case of rejection of the null hypothesis; the fixed effects model would give a superior approximation of coefficients.

3.11 Ethical Considerations

Researchers have a duty to their line of work, clientele and respondents and should uphold high standards of ethics to ensure that both the function and the information is not ill-reputed (Saunders *et al.*, 2009). Greener (2008) recommends the following ethical considerations; getting informed consent from the participants, avoiding invasion of privacy and confidentiality. Additionally, he recommends avoiding withholding information so as not to mislead/ withhold information from participants about the

research, protection of data so that it is not diverged for different purposes than intended. These ethical issues were considered by acquiring a research license from National Commission for Science, Technology and Innovation (NACOSTI) Appendix III, acknowledging other authors (through citation) and those who in one way or another have contributed towards the progress of the study.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents study findings and subsequent interpretations with regard to fund characteristics and financial performance of unit trusts in Kenya as well as the moderating effect of inflation on the relationship between fund characteristics and performance of unit trust funds in Kenya. The chapter presents the results in tables. Besides, the section discusses descriptive and inferential statistics. From the results of inferential statistics, the chapter makes meaning of the same by documenting findings in light of each study objective and hypotheses. Consequently, interpretations of the findings are made in line with the objectives and inter-relating them with relevant literature.

4.2 Descriptive Statistics

In the processing of ascertaining the nature of the data used in the study, descriptive statistics such as the mean and the standard deviation were determined. The following Table 4.1 below captures a summary of descriptive Statistics.

Table 4.1: Descriptive Statistics

Fund	Observation	Variables	Mean	Std. Dev.	Minimum	Maximum
Equity	99	performance	-15.9348	4.576758	-22.05	-4.28
		Operating Expense	6.723605	0.988355	3.109579	8.539001
		Fund Size	8.20101	0.92488	5.01	9.79
		Systematic Risk	0.446162	1.731402	-3.96	3.123
		Unsystematic Risk	1.470505	1.730924	-0.81	6.65
		Inflation Rate	8.160109	3.233511	3.971667	16.23083
Money market	107	performance	-23.69112	11.79204	-39.12	2.69
		Operating Expense	7.276687	0.7095546	5.189953	8.822979
		Fund Size	8.911495	0.6549662	6.52	10.16
		Systematic Risk	-.2171196	1.373257	-2.96	2.36
		Unsystematic Risk	1.153458	1.609808	-0.45	5.09
		Inflation Rate	8.271214	3.293276	3.971667	16.23083
	85	performance	-19.63447	4.804927	-27.1	-6.29
		Operating Expense	6.21221	0.6878334	4.277838	7.816175

Bond		Fund Size	7.652941	0.6777393	4.6	8.69
		Systematic Risk	0.9009624	1.327525	-1.55	3.46
		Unsystematic Risk	0.4024706	1.23702	-1.31	2.79
		Inflation Rate	8.091342	3.066169	3.971667	16.23083
Balanced	100	performance	-10.21065	10.98119	-37.92000	-1.229000
		Operating Expense	6.688298	0.7579331	4.964448	8.423958
		Fund Size	8.171414	0.7301426	5.7	9.3
		Systematic Risk	0.375151	1.911367	-2.67	3.64
		Unsystematic Risk	1.52040	2.000511	-1.9	6.7
		Inflation Rate	8.115689	3.124007	3.971667	16.23083

Source: Study data (2020)

As indicated in Table 4.1, the observations on equity fund were 99 funds. The mean performance of equity fund is -15.93475 below what is predicted by CAPM with a standard deviation of 4.576758 and minimum and maximum values of -22.05000 and –4.280000, respectively. The standard deviation indicates that the data is highly variable as depicted by minimum and maximum values since it includes both small and large unit trust funds over the period. The negative value of the Jensen alpha indicates that equity funds, on average, underperform the market. The negative values for minimum and maximum indicate that all equity funds were underperforming the market in the period of study. From the results, the mean operating expense for equity funds in each unit trust during the period of study is 6.723605. The standard deviation is 0.988355 indicating high variation among unit trusts operating equity fund as shown by the minimum and maximum values of 3.109579 and 8.539001, respectively. This variation is in line with the size of the fund. Table 4.1 further indicates that each unit trust firm operates an average equity fund of 8.201010. The fund size has a standard deviation of 0.924880, a minimum value of 5.010000, and a maximum of 9.790000, which explains the high variation.

The systematic risk of equity fund further in Table 4.1 ranges from -3.960000 to 3.123000 with a mean of 0.446162. The average implies that for a one per cent increase

in market return, equity fund return increases by 0.446162 per cent. Further, a positive value of beta higher than 1 indicates that at certain times equity fund is riskier than the general market, but potentially more profitable. A beta of less than 1 is generally less risky than the market in general, and gains are also probably less than market gains. The negative beta indicates a negative correlation to the market, meaning they move in the opposite direction to the general market. The beta of -3.96 shows that equity fund had decrease in value by 3.96 per cent in a given year for each increase of one per cent in the market, and vice versa. The standard deviation is 1.731402, which implies that throughout the study period, market risk had high variation.

On the unsystematic risk of equity fund, Table 4.1 has a mean of 1.470505, indicating the average return that is not accounted for by the market risk. The standard deviation is 1.730924, which shows that within the period of study, the unsystematic risk was highly variable. The minimum and maximum values of firm-specific risks are -0.810000 and 6.650000, respectively. Furthermore, the summary statistics in Table 4.1 indicate that, on average, during the period of analysis, the rate of inflation was 8.16 per cent. The standard deviation was 3.23 per cent, while the minimum and maximum values were 3.97 and 16.23 per cent, respectively. Therefore, during the period of analysis, the funds experienced mild to rapid levels of inflation. This scenario is in harmony with the economic cycles during the study period. Further, guaranteeing the representative nature of data.

On the money market fund, Table 4.1 shows that the observations were 107 funds. The mean performance as -23.69112 below what is predicted by CAPM. The standard deviation is 11.79204, which shows data to be highly variable as depicted by minimum

and maximum values of -39.12000 and 2.690000, respectively. The negative value of the Jensen alpha indicates that the money market fund, on average, is underperforming the market. The positive value indicates that some of the funds were over performing the market in the period of study. The results further show the mean operating expense for money market funds is 7.276687, with a standard deviation of 0.7095546, indicating a significant variation among money market funds mainly due to the size of the fund in each unit trust. The minimum and maximum values are consistent with the fund size meaning that small funds have less operating expense compared to large funds. On fund size, Table 4.1 further indicates that, on average, the firm size in the money market fund to be 8.911495. The firm size has a standard deviation of 0.654966, which means high variation, as illustrated by the minimum and maximum values of 6.520000 and 10.16000 respectfully.

The systematic risk of money market fund further in Table 4.1 ranges from -2.960000 to 2.360000 with an average of -0.217120. The mean indicates that for a one per cent increase in market return, money market fund return decreases by 0.217120 per cent. Further, the positive value of beta higher than 1 indicates that at certain times, money market fund is riskier than the general market, but potentially more profitable. On the other hand, a beta of less than 1 is generally less risky than the market, and gains are also probably less than market gains. The negative beta indicates a negative correlation to the general market, meaning they move in the opposite direction to the market. The beta of -2.96 showed that, money market fund decrease in value by 2.96 per cent in a given year for each increase of one per cent in the general market, and vice versa. The standard deviation of 1.731402 indicates a high variation of market risk within the period of study.

Further, Table 4.1 on the unsystematic risk of money market fund shows a mean of 1.153458, indicating the average return that is not accounted for by the market risk. The standard deviation is 1.609808, which shows that within the study period, the unsystematic risk was highly variable. The minimum and maximum values are -0.450000 and 5.090000, respectively. The fund also experiences positive and negative swigs to form specific risks. Furthermore, the summary statistics in Table 4.1 indicate that, on average, during the period of analysis, the rate of inflation was 8.271214 per cent. The standard deviation was 3.293276 per cent, while the minimum and maximum values were 3.971667 and 16.23083 per cent, respectively. Therefore, during the period of analysis, the funds experienced mild to rapid levels of inflation. This situation is in harmony with the economic cycles during the study period. Further, guaranteeing the representative nature of data.

Also, Table 4.1 shows an observation of 85 funds with a mean performance of -19.63447 below what is predicted by CAPM on the bond fund. The standard deviation is 4.804927 showing that the performance is highly variable with minimum and maximum values of -27.10000 and -6.290000, respectively. The negative value of the Jensen alpha indicates that the bond fund, on average, underperforms the market. The negative values for minimum and maximum indicate that all bond funds were underperforming the market in the period of study. The average amount of operating expense, as shown in Table 4.1, is 6.21221 for any of the bond funds. The operating costs are highly variable among the bond funds, as demonstrated by a standard deviation of 0.6878334. The variation is accounted for by the minimum and maximum values of 4.277838 and 7.816175, respectively, which is in line with the fund size. Table 4.1 further indicates each bond fund has an average fund size of 7.652941. The fund size standard deviation is 0.677739,

with minimum values of 4.600000 and a maximum of 8.690000, which shows the small funds and the large funds over the study period.

The systematic risk of bond fund further in Table 4.1 ranges from -1.550000 to 3.460000 with a mean of 0.900962. The average indicates that for a one per cent increase in market return, bond fund return increases by 0.900962 per cent. Further, the positive value of beta higher than 1 suggests that at certain times bond fund is more risky than the general market, but potentially more profitable. Conversely, a beta of less than 1 is generally less risky than the market, and gains are probably less than market gains. The negative beta indicates a negative correlation to the general market, meaning they move in the opposite direction to the market. The beta of -1.55 showed that bond fund decreased in value by 1.55 per cent in a given year for each increase of one per cent in the market, and vice versa. The standard deviation was 1.327525, which implies that throughout the study period, the market risk was highly variable.

On the unsystematic risk of the bond fund, Table 4.1 shows the mean as 0.4024706 with minimum and maximum values as -1.310000 and 2.790000, respectively. These indicate that 0.4024706 of average return in a bond fund is not accounted for by the market risk. The fund also experiences positive and negative swigs of firm-specific risks. The standard deviation of 1.237020 indicates a high variation of firm-specific risks during the period of study. Furthermore, the summary statistics in Table 4.1 suggest that, on average, during the period of analysis, the rate of inflation was 8.091342 per cent. The standard deviation was 3.066169 per cent, while the minimum and maximum values were 3.971667 and 16.23083 per cent, respectively. Therefore, during the period of analysis, the funds experienced mild to rapid levels of inflation. This scenario is in harmony with the

economic cycles during the study period. Further, guaranteeing the representative nature of data.

The balanced fund on the other hand had 100 funds that were observed. As depicted by Table 4.1, it has a mean performance of -10.21065 below what is predicted by CAPM. The minimum and maximum values are -37.92000 and -1.229000, respectively. The negative value of the Jensen alpha indicates that the balanced fund has on average been underperforming the market. The negative values for minimum and maximum show that all balanced funds were underperforming the market in the period of study. The standard deviation of 10.98119 indicates a high variation in the performance of balanced funds within the period of study. From Table 4.1, balanced funds have a mean value on operating expense of 6.688298 with a standard deviation of 0.7579331, which indicates a high variation in line with the size of the fund. The minimum and maximum values are 4.964448 and 8.423958 respectively; showing small funds have smaller expenses. On fund size, Table 4.1 further indicates, on average, the fund size of the balanced fund to be 8.171414. The fund size has a standard deviation of 0.730143, with minimum values of 5.700000 and a maximum of 9.300000. The standard deviation is highly variable over the period based on the size of the fund.

The systematic risk of balanced funds further in Table 4.1 ranges from -2.670000 to 3.640000 with a mean of 0.375152. This average indicates that for a one per cent increase in market return, balanced fund return increases by 0.375152 per cent. Further, the positive value of beta higher than 1 suggests that at certain times balanced fund was more risky than the general market, but potentially more profitable. Conversely, a beta of less than 1 was generally less risky than the market, and gains were also probably less than

market gains. The negative beta indicates a negative correlation to the general market, meaning they move in the opposite direction to the market. The beta of -2.67 showed that balanced fund decreased in value by 2.67 per cent in a given year for each increase of one per cent in the general market, and vice versa. The standard deviation of systematic risk was 1.911367, which connotes that during the period of study, the market risk was highly variable.

On the unsystematic risk of a balanced fund, Table 4.1 shows an average unsystematic risk of 1.520404. This average indicates that 1.520404 of average return in a balanced fund is not accounted for by the market risk. The minimum and maximum values of -1.900000 and 6.700000, respectively shows that the fund experiences positive and negative swings to firm-specific risks. The standard deviation is 2.000511 and shows that within the period of study, the unsystematic risk was highly variable. On the inflation rate, the summary statistics in Table 4.1 indicate that, on average, during the period of analysis, the inflation rate was 8.115689 per cent. The standard deviation was 3.124007 per cent, while the minimum and maximum values were 3.971667 and 16.23083 per cent, respectively. Therefore, during the period of analysis, the funds experienced mild to rapid levels of inflation. This inflation rate is in harmony with the economic cycles during the study period. Further, guaranteeing the representative nature of data.

4.3 Inferential Statistics

This section covers the results of hypotheses tests conducted to determine the effects of fund characteristics on the performance of unit trusts in Kenya while taking into consideration the moderation effects of inflation. This section also describes the diagnostic tests conducted for accurate estimation of the empirical model.

4.3.1 Diagnostic Tests Results

The study carried out different diagnostic tests as explained in previous chapter to ensure that there are no violations on the assumptions of CLRM and appropriate model is chosen for analysis. The parameter estimates will be inefficient and inconsistent in the event that the CLRM assumptions are violated. The results of the following diagnostic tests are provided in this section: heteroscedasticity test, multicollinearity test, stationarity test, normality test and hausman specification test.

4.3.1.1 Normality Test

The study applied the jarque-Bera test to test for normality in the study data. When the p-value is in excess of 0.05, then the data is said to be normally distributed as recommended by Gujarati (2003), Razali & and Wah (2011). The normality results are shown in table 4.2.

Table 4.2: Results of Normality Test

Fund	Variable	Jarque-Bera	p-value
Equity	Performance	20.31830	0.000039
	Operating Expense	1.136302	0.566572
	Fund Size	1.556121	0.459296
	Systematic Risk	7.769763	0.020550
	Unsystematic Risk	18.39042	0.000102
Money market	Performance	25.90502	0.000002
	Operating Expense	6.736803	0.034445
	Fund Size	10.00765	0.006712
	Systematic Risk	3.621713	0.163514
	Unsystematic Risk	15.51952	0.000427
Bond	Performance	34.52356	0.000000
	Operating Expense	0.685517	0.709810
	Fund Size	52.11721	0.000000
	Systematic Risk	1.008616	0.603923
	Unsystematic Risk	1.893609	0.387979
Balanced	Performance	95.33008	0.0000
	Operating Expense	1.056873	0.589526
	Fund Size	4.213409	0.121638
	Systematic Risk	4.812908	0.090134

	Unsystematic Risk	0.057907	0.971462

Source: Study Data (2020)

Table 4.2 shows the results of the normality test. The null hypothesis was that; the error term is not normally distributed. The rejection of the null hypothesis was when the P-value is less than a 5 per cent level of significance. Some variables in each fund had a p-value of less than 0.05, indicating that the error term is not normally distributed. The natural logarithm was used to convert the non-normally distributed variables into normally distributed variables.

4.3.1.2 Heteroscedasticity Test

The study tested for panel-level heteroscedasticity using the Likelihood Ratio (LR), as shown in Appendix V. The null hypothesis of this test was that the variance of the error term is homoscedastic. The likelihood ratio test produced a chi-square value of 11.12935 with a p-value of 0.6000 in the equity fund, a chi-square value of 2.152801 with a corresponding p-value of 0.9997 in the money market fund, a chi-square of 31.63484 and a corresponding p-value of 0.0709 in the bond fund and a chi-square of 95.3945 and a p-value of 0.1506 in the balanced fund. The p-values in all funds are higher than the 5 per cent confidence level. We do not reject the null of homoscedasticity. Consequently, this was an indication of the absence of heteroscedasticity in all the funds. Therefore, the regression model for these funds was suitable for analysis since the error term was homoscedastic over time, thereby making the standard errors appropriate for testing the significance of the coefficient.

4.3.1.3 Multicollinearity Test

The study tested for multicollinearity using correlation matrix. Multicollinearity is severe if the correlation coefficient is greater than 0.8. (Gujarati, 2003; Cooper & Schindler, 2008). Table 4.3 presents the results of multicollinearity test.

Table 4.3: Fund Correlation matrix

Fund		Operating Expense	Fund Size	Systematic Risk	Unsystematic Risk	Inflation Rate
Equity	**Operating Expense**	1.000000				
	Fund Size	0.545470	1.000000			
	Systematic Risk	-0.041008	-0.094652	1.000000		
	Unsystematic Risk	0.415632	0.691197	-0.080758	1.000000	
	Inflation Rate	-0.078503	-0.005113	-0.078726	0.011063	1.000000
Money Market	**Operating Expense**	1.000000				
	Fund Size	0.217349	1.000000			
	Systematic Risk	-0.019100	-0.024791	1.000000		
	Unsystematic Risk	-0.037338	-0.185194	-0.058802	1.000000	
	Inflation Rate	-0.053775	-0.147997	-0.067983	0.040928	1.000000
Bond	**Operating Expense**	1.000000				
	Fund Size	0.18663	1.000000			
	Systematic Risk	-0.03622	-0.12854	1.000000		
	Unsystematic Risk	-0.04316	-0.17759	-0.07533	1.000000	
	Inflation Rate	0.053641	0.007007	0.036106	0.006654	1.000000
Balanced	**Operating Expense**	1.000000				
	Fund Size	0.36465	1.000000			
	Systematic Risk	-0.05839	0.53062	1.000000		
	Unsystematic Risk	-0.05477	-0.13633	-0.13033	1.000000	
	Inflation Rate	-0.027435	-0.052844	0.019203	0.059789	1.000000

Source: Study data (2020)

As presented in Table 4.3, the study used a correlation matrix to test for multicollinearity. The explanatory variables used in this study were; operating expense, fund size, systematic risk, unsystematic risk, and inflation rate. The results indicate that the correlation coefficients for all variables in all the funds were less than 0.8, implying that the study data did not exhibit severe multicollinearity as recommended by (Gujarati, 2003; Cooper & Schindler, 2008).

4.3.1.4 Stationarity Test

The panel unit root test on all variables used in the analysis was applied to avoid spurious regression results. The full results of the panel unit root test for performance, operating expenses, and fund size are in Table 4.4.

Table 4.4: Stationarity Test Results

		Common unit root test		**Individual tests**					
		Levin, Lin & Chu		Im, Pesaran and Shin		ADF - Fisher Chi-square		PP - Fisher Chi-square	
Fund	**Variable**	Statistic	p-value	Statistic	p-value	Statistic	p-value	Statistic	p-value
Equity	Performance	-26.717	0.0000	-8.72480	0.0000	72.5086	0.0000	103.544	0.0000
	Operating Expense	-11.205	0.0000	-3.36723	0.0004	45.2396	0.0055	64.9276	0.0000
	Fund Size	-24.213	0.0000	-7.23613	0.0000	50.5497	0.0005	68.0952	0.0000
Money market	Performance	-8.6819	0.0000	-3.01907	0.0013	48.4237	0.0010	60.5935	0.0000
	Operating Expense	-12.361	0.0000	-4.39159	0.0000	59.1222	0.0000	74.9357	0.0000
	Fund Size	-13.007	0.0000	-7.09523	0.0000	76.8878	0.0000	83.0452	0.0000
Bond	Performance	-13.751	0.0000	-5.26689	0.0000	60.9210	0.0000	55.6599	0.0001
	Operating Expense	-16.161	0.0000	-9.65353	0.0000	73.1420	0.0000	103.179	0.0000
	Fund Size	-8.2129	0.0000	-4.17700	0.0000	55.3709	0.0001	60.0662	0.0000
Balanced	Performance	-10.921	0.0000	-4.36478	0.0000	52.3109	0.0003	62.8380	0.0000
	Operating Expense	-7.6986	0.0000	-4.37407	0.0000	63.5005	0.0000	86.6480	0.0000
	Fund Size	-18.793	0.0000	-8.71498	0.0000	80.8590	0.0000	82.4799	0.0000

Source: Study data (2020)

Table 4.4 shows the p-values associated with unit root tests for performance, fund size and operating expenses in all funds are less than 5 per cent, which is recommended by Blackburne and Frank (2007). Therefore the null hypothesis of a unit root is rejected; hence performance, fund size and operating expense in all funds do not have a unit root, thus used at the level.

4.3.1.5 Model Specification Test

The study assessed the fixed and random effect model for each fund. The study used the Hausman specification test to determine the proper model. Table 4.5 shows the Hausman test results.

Table 4.5: Hausman Test Results

Fund	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob
Equity	9.31199	2	0.009504
Money market	44.138455	2	0.0000
Bond	0.235609	2	0.8889
Balanced	11.674172	2	0.0029

Source: Study Data (2020)

Table 4.5 shows the Hausman test results for all the funds. The null hypothesis of the Hausman test is; the random effect is preferred to the fixed-effects model. The Hausman test results for the equity fund indicate a chi-square of 9.31199 and a p-value of 0.009504, which is less than the significance level of 0.05. Hence, the study rejects the null hypothesis that the random effect is preferred to the fixed-effect model. Therefore, the fixed-effect model is adopted for the equity fund in the study. On the money market, The Hausman test results indicate a chi-square of 44.138455 and a p-value of 0.0000, which is less than the significance level of 0.05. Hence, the study rejects the null hypothesis that the random effect is preferred to the fixed-effect model. Therefore, the fixed-effect model is adopted in the money market fund in the study.

Table 4.5 further, indicates the Hausman test results on the bond fund indicate a chi-square of 0.2356099 and a p-value of 0.8889, which is higher than the significance level of 0.05. Hence, the study does not reject the null hypothesis that the random effect is preferred to the fixed-effect model. Therefore, the random effect model is adopted for the bond fund in the study. Similarly, the Hausman test results indicate a chi-square of 11.674172 and a p-value of 0.0029, which is less than the significance level of 0.05. Hence, the study rejects the null hypothesis that the random effect is preferred to the fixed-effect model. Therefore, the fixed-effect model is adopted for the balanced fund in this study.

4.3.2 Hypothesis Testing

This section presents the study findings thematically based on the study objectives. It shows the effect of operating expenses, fund size, systematic risk and unsystematic risk on fund performance in Kenya. The model results were interpreted and discussed at a 95% significance level (α=0.05).

Table 4.6: Effect of Fund Characteristics on Fund Performance

Fund	Variable	Coefficient	Std. Error	t-Statistic	Prob.	Weighted Statistics
	Constant	-1.41E+16	4.26E+16	-0.330191	0.7421	R-squared
	Operating expense	-1.64E+09	5.22E+08	-3.147710	0.0023	0. 725685
	Fund size	2.51E+08	25129369	10.00694	0.0000	Adjusted R-squared
	Systematic risk	-2.52E+16	1.92E+16	-1.313931	0.0192	0. 671499
	Unsystematic risk	-1.39E+16	1.92E+16	-0.724114	0.4711	Prob(F-statistic)
Equity						0.00000
	Constant	51851601	14981681	3.461000	0.0008	R-squared
	Operating expense	-0.790685	0.113326	-6.977072	0.0000	0.897185
	Fund size	0.085234	0.004061	20.98723	0.0000	Adjusted R-squared
	Systematic risk	-46878643	15162515	-3.091746	0.0027	0. 878701
Money	Unsystematic risk	-42560961	13020032	-3.268883	0.0015	Prob(F-statistic)
market						0.00000
	Constant	5020687.	4061819.	1.236069	0.2208	R-squared
	Operating expense	0.637784	0.084647	7.534660	0.0000	0. 872259
	Fund size	0.035612	0.010773	3.305717	0.0015	Adjusted R-squared
	Systematic risk	-3365886.	2330392.	-1.444343	0.0153	0. 841292
	Unsystematic risk	-4254001.	2699703.	-1.575729	0.0119	Prob(F-statistic)
Bond						0.00000
	Constant	-3534459.	20990778	-0.168382	0.8667	R-squared
	Operating expense	0.704129	0.205516	3.426143	0.0010	0.580557
	Fund size	0.025146	0.019091	1.317167	0.0191	Adjusted R-squared
	Systematic risk	3376319.	9932622.	0.339922	0.7348	0.562709
	Unsystematic risk	1298948.	9805207.	0.132475	0.8949	Prob(F-statistic)
Balanced						0.00000

Source: Study Data (2020)

The findings in Table 4.6 indicate that the R-squared for equity fund, money market fund, bond fund and balanced fund are 0.725685, 0.897185, 0.872259, and 0.580557 respectfully with p-values of 0.0000. The p-values are less than the significance level of 0.05 and thus demonstrate that the model was fit to explain the dependent variable, using a constant term and all the four independent variables: operating expense, fund size, systematic risk, and unsystematic risk. Besides, the null hypothesis that the coefficients of

all the variables included in the model were simultaneously equal to zero, excluding the constant is rejected. Finally, operating expenses have a significant negative relationship with performance in equity and money market funds but a significant positive relationship in bond and balanced funds. Fund size has a significant positive connection with performance in all funds. Systematic risk has a significant negative effect on performance in equity fund, money market fund and bond fund.it also has a positive insignificant effect on performance in balanced fund. Unsystematic risk has a negative significant effect on performance in money market fund and bond fund. However, it has an insignificant effect on performance in equity fund and balanced fund.

4.3.2.1 Operating Expenses and Performance of Unit Trust Funds

The first study objective sought to determine the effect of operating expenses on the performance of unit trust funds in Kenya. To establish this relationship, a null hypothesis (H_{01}) that operating expenses have no significant effect on the performance of unit trust funds in Kenya was tested. The estimates of model 3.2a to 3.2d for each category of the funds were considered. Table 4.6 indicates that the equity fund coefficient of operating expenses is -1.64E+09 with a p-value of 0.0023, which is less than the significance level of 0.05 and t statistic of -3.147710. Hence, the null hypothesis that operating expenses have no significant effect on performance of unit trust funds in Kenya was rejected on equity funds. Thus, an increase in operating expenses has a significant effect on performance of equity fund in Kenya.

In the money market fund, the coefficient of operating expenses is -0.790685 with a p-value of 0.0000 and a t- statistic of -6.977072. The p-value is less than 0.05; hence the null hypothesis that operating expenses has no statistically significant effect on

performance of unit trust funds is rejected on money market fund in Kenya. On bond fund, the coefficient is 0.637784 with a p-value of 0.0010 and a t-statistic of 7.534660. Since the p-value is less than 0.05, the null hypothesis is rejected; hence operating expenses have a statistically significant effect on performance of bond fund in Kenya. The balanced fund, on the other hand, has a coefficient of 0.704129 and a corresponding p-value of 0.0000 and a t-statistic of 3.426143. The null hypothesis is rejected since the p-value is less than 0.05. Therefore operating expenses have a statistically significant effect on the performance of the balanced fund in Kenya.

These findings are inconsistent with empirical findings by Ombongi (2014), Mbataru (2012), Ersin, Hassan, and Turhan (2015), Nyanamba, Muturi, and Nyangau (2015) that operating expenses have no effect on the performance of unit trust funds. The findings, however, agree with results by Halil (2015), Ainulashikin and Andrew (2015), and Maina (2013), who argued that operating expenses affect the performance of unit trust funds. The coefficients of operating expenses in equity and money market funds are negative, implying that an increase in unit trust fund performance resulted from a reduction in operating expenses. However, the bond and balanced funds have a positive coefficient indicating that an increase in operating expenses led to increased performance of the unit trust funds.

4.3.2.2 Fund Size and Performance of Unit Trust Funds

In light of the second objective, the study sought to establish the effect of fund size on the performance of unit trust funds in Kenya. Testing done on the null hypothesis (H_{02}) is that; fund size has no significant effect on the performance of unit trust funds in Kenya. Table 4.9 shows that the coefficient of fund size in the equity fund is 2.51E+08, with

corresponding p-values of 0.0000 and t-statistic of 10.00694. The p-value is less than 0.05, and hence the null hypothesis is rejected, meaning that fund size affects the performance of equity fund. In the money market fund, the coefficient is 0.085234, with a p-value of 0.0000 and a t-statistic of 20.98723. The p-value is less than 0.05, and hence the null hypothesis is rejected. Fund size, therefore, affects the performance of money market funds.

On bond fund, the coefficient is 0.035612, with a corresponding value of p-value of 0. 0.0015 and t-statistic of 3.305717. The p-value is less than 0.05, hence the null hypothesis is rejected. Fund size, therefore, affects the performance of the bond fund. For the balanced fund, the coefficient is 0.025146, with a p-value of 0.0191 and a t-statistic of 1.317167. The p-value is less than 0.05, and hence the null hypothesis is rejected, meaning that fund size affects the performance of balanced funds in Kenya. The coefficients of fund size in all funds are positive, meaning that fund size and performance have a positive relationship in that an increase in fund size increases the performance of unit trust fund in Kenya. These findings do not agree with the results by Ombongi (2014), Mbataru (2012), See and Josoh (2012), and Norma *et al.*, (2010), who observed no effect of fund size on the performance of unit trust funds. Ainulashikin and Andrew (2015) found a significantly negative effect while Samira and Slaheddine (2011) and Maina (2013) found a significant positive effect of fund size and performance of unit trust funds, which is in agreement with the findings of this study.

4.3.2.3 Systematic Risk and Performance of Unit Trust Funds

The third study objective sought to determine the effects of systematic risk on the performance of unit trust funds in Kenya by testing on the null hypothesis (H_{03});

systematic risk has no significant effect on the performance of unit trust funds in Kenya. Table 4.9 indicates that the coefficient of systematic risk for the equity fund is -2.52E+16, associated with a p-value of 0.0192, which is less than the significant level of 0.05 and t statistic of 10.00694 hence systematic risks has a statistically significant effects on the performance of equity fund in Kenya. The coefficient for systematic risk in money market is -46878643. This has a p-value of 0.0027 and a t-statistic of -3.091746. The null hypothesis is rejected since the p-value is less than 0.05. Hence systematic risk has statistically significant effect on the performance of the money market fund in Kenya.

In the bond fund, the coefficient of systematic risk is -3365886, with the corresponding p-value of 0.0153 and a t-statistic of -1.444343. The p-value is less than 0.05; hence the null hypothesis is rejected, meaning that systematic risk has statistically significant effect on the performance of the bond fund in Kenya. The balanced fund, on the other hand, has a coefficient of 3376319 and a p-value of 0.7348 and a t-statistic of 0.339922. The p-value is greater than 0.05; hence the null hypothesis is not rejected, meaning that systematic risk does not have statistically significant effect on the performance of the balanced fund in Kenya. Equity fund, money market fund, and the bond fund have negative coefficients while balanced fund has a positive coefficient. The positive coefficients in balanced fund show that, an increase in performance of the unit trust funds is as a result of an increase in systematic risk. The negative coefficient in equity fund, money market fund and bond fund on the other hand, indicates that an increase in performance is as a result of a decrease in systematic risk. The empirical findings on equity, money market and bond funds are consistent with Badr (2016), Ainulashikin, and Andrew (2015), who established a significant effect of systematic risk on the performance of unit trust funds while findings on balanced fund are inconsistent with these studies. The results, however, are

consistent with See and Jusoh (2012) who observed the higher the risk the higher the returns.

4.3.2.4 Unsystematic Risk and Performance of Unit Trust Funds

The fourth study objective sought to establish the effects of unsystematic risk on the performance of unit trust funds in Kenya. The study tested the null hypothesis (H_{04}); unsystematic risk has no significant effect on the performance of unit trust funds in Kenya. Table 4.9 indicates that the coefficient of unsystematic risk in the equity fund is -1.39E+16, associated with a p-value of 0.4711, which is more than the significant level of 0.05 and t- statistic of -0.724114. Since the p-value is greater than 0.05, the study does not reject the null hypothesis; hence unsystematic risk does not have a statistically significant effect on the performance of equity fund in Kenya. The coefficient for the money market fund is -42560961, with a p-value of 0.0015and a t-statistic of -3.268883. The study rejects the null hypothesis since the p-value is less than 0.05; hence unsystematic risk has a statistically significant effect on the performance of the money market fund in Kenya.

The bond fund unsystematic risk coefficient is -4254001, with the p-value 0.0119 and t-statistic of -1.575729. Since the p-value is less than 0.05, the study rejects the null hypothesis; hence unsystematic risk has a statistically significant effect on the performance of bond fund in Kenya. On balanced fund, the coefficient of unsystematic risk is 1298948 and a p-value of 0.8949 with a t-statistic of 0.132475. The p-value is greater than 0.05, and hence the null hypothesis is not rejected, implying that unsystematic risk does not have a statistically significant effect on the performance of balanced fund in Kenya. The coefficients are negative in the equity fund, money market

fund and bond fund indicating that performance increases with decrease in unsystematic risk. On the contrary, the coefficient in balanced fund is positive. This implies that performance in balanced fund increase with increase in unsystematic risk. The finding on equity fund and balanced fund that unsystematic risk has no statistically significant effect on performance of unit trust funds is in agreement with Bonolo, Beatrice, and John (2017), Praveen, Das, and Uma (2013) and William (2010), who found no relationship between firm internal factors and performance of unit trust funds. However, Gachoka (2013) and Gitagia (2012) findings are coherent with the results on money market and bond funds that unsystematic risk has statistically significant effect on the performance of unit trust fund.

4.3.2.5 Moderating Effect of Inflation on the Relationship between Fund Characteristics and Performance of Unit Trust Funds

To test the fifth study hypothesis that inflation does not have a moderating effect on the relationship between fund characteristics and performance of unit trust funds, the study adopted a two-step procedure as specified Whisman and McClelland (2005) moderation test. The first step was to test inflation as an explanatory variable. Therefore models 3.3a - 3.3d were estimated. Table 4.7 reports model 3.3a – 3.3d estimates which report inflation as an independent variable.

Table 4.7: Inflation as an Independent Variable

Fund	Variable	Coefficient	Standard Errors	t-Statistic	P-value	Weighted Statistics
	Constant	-7.26E+16	6.16E+16	-1.178493	0.2416	R-squared
	Operating expense	-1.59E+09	4.83E+08	-3.281483	0.0015	0. 669452
	Fund size	2.50E+08	23368196	10.70613	0.0000	Adjusted R-squared
	Systematic risk	-2.10E+16	1.85E+16	-1.134319	0.0259	0. 651488
	Unsystematic risk	-1.35E+16	1.83E+16	-0.741577	0.4602	Prob(F-statistic)
Equity	Inflation rate	6.74E+15	5.73E+15	1.176464	0.2424	0.00000

	Constant	34809098	23445998	1.484650	0.1408	R-squared
	Operating expense	-0.643888	0.107492	-5.990086	0.0000	0. 859289
	Fund size	0.084472	0.003862	21.87034	0.0000	Adjusted R-squared
	Systematic risk	-30220476	14644506	-2.063605	0.0416	0. 852254
	Unsystematic risk	-26377024	12496560	-2.110743	0.0373	Prob(F-statistic)
Money market	Inflation rate	-580205.5	1993357.	-0.291070	0.7716	0.00000
	Constant	7932359.	3388655.	2.340858	0.0218	R-squared
	Operating expense	0.676969	0.078639	8.608589	0.0000	0.955023
	Fund size	0.035253	0.008265	4.265348	0.0001	Adjusted R-squared
	Systematic risk	-2808787.	1714378.	-1.638371	0.0105	0.952177
	Unsystematic risk	-3658068.	1914774.	-1.910444	0.0498	Prob(F-statistic)
Bond	Inflation rate	-473258.3	179692.3	-2.633715	0.1002	0.00000
	Constant	63626836	26668174	2.385872	0.0191	R-squared
	Operating expense	0.858267	0.193952	4.425141	0.0000	0. 684786
	Fund size	0.017187	0.018059	0.951714	0.0343	Adjusted R-squared
	Systematic risk	-1785587.	9758208.	-0.182983	0.8552	0. 662463
	Unsystematic risk	-5258037.	9533164.	-0.551552	0.5826	Prob(F-statistic)
Balanced	Inflation rate	-6778164.	1809088.	-3.746730	0.1603	0.00000

Source: Study data (2020)

Table 4.7 indicates that the coefficient of inflation, which is of interest under model 3.3a - 3.3d in the equity fund, is 6.74E+15 with a corresponding p-value of 0.2424, which is higher than the level of significance of 0.05 hence insignificant. In the money market fund, the coefficient is -580205.5, with a corresponding p-value of 0. 7716. The p-value is greater than 0.05 hence insignificant. The bond fund has a coefficient of -473258.3, with a p-value of 0.1002. The p-value is greater than 0.05; hence the coefficient is insignificant. On the other hand, the balanced fund has a coefficient of -6778164, with a p-value of 0.1603. The p-value is greater than 0.05; hence the coefficient is insignificant. The second step is to test inflation as a moderator. Models 3.4a – 3.4d were estimated and table 4.8 represents the results.

Table 4.8: Inflation as a Moderator on the Relationship between Fund Characteristics and Performance

Fund	Variable	Coefficient	Standard Errors	t-Statistic	P-value	Weighted Statistics
Equity	Constant	-1.59E+16	1.14E+17	-0.140278	0.8888	R-squared

	Operating expense	-3.06E+09	2.24E+09	-1.369159	0.0174	0. 796279
	Fund size	2.76E+08	79163504	3.487174	0.0008	Adjusted R-squared
	Systematic risk	-4.75E+16	4.96E+16	-0.956515	0.0341	0. 775444
	Unsystematic risk	-2.81E+16	5.13E+16	-0.547475	0.0485	Prob(F-statistic)
	Inflation rate	-5.13E+13	1.28E+16	-0.004001	0.0368	0.00000
	Operating expense * Inflation rate	2.10E+08	3.06E+08	0.684500	0.0495	
	Fund size * Inflation rate	-3927205.	10124781	-0.387881	0.0340	
	Systematic risk * Inflation rate	3.15E+15	5.42E+15	0.580778	0.0289	
	Unsystematic risk * Inflation rate	1.55E+15	5.82E+15	0.266749	0.0393	
Money market	Constant	30262369	42043321	0.719790	0.4734	R-squared
	Operating expense	0.810693	1.010613	0.802180	0.0424	0.862630
	Fund size	0.045882	0.021592	2.124988	0.0362	Adjusted R-squared
	Systematic risk	-6200599.	50164545	-0.123605	0.0199	0.849752
	Unsystematic risk	-6501852.	42263033	-0.153843	0.0471	Prob(F-statistic)
	Inflation rate	243866.9	5002663.	0.048747	0.0162	0.00000
	Operating expense * Inflation rate	-0.213063	0.149497	-1.425199	0.0157	
	Fund size * Inflation rate	0.005595	0.003125	1.790444	0.0365	
	Systematic risk * Inflation rate	-2985209.	6446435.	-0.463079	0.0444	
	Unsystematic risk * Inflation rate	-2574664.	5409823.	-0.475924	0.0352	
Bond	Constant	-3512189.	7365573.	-0.476839	0.6349	R-squared
	Operating expense	0.723863	0.320102	2.261354	0.0267	0.868027
	Fund size	0.035443	0.023182	1.528931	0.0130	Adjusted R-squared
	Systematic risk	6800382.	4356861.	1.560844	0.0122	0.851757
	Unsystematic risk	4238532.	4899307.	0.865129	0.0389	Prob(F-statistic)
	Inflation rate	875316.5	796057.4	1.099564	0.0275	0.00000
	Operating expense * Inflation rate	-0.006332	0.035269	-0.179539	0.0458	
	Fund size * Inflation rate	7.11E-05	0.002529	0.028098	0.0197	
	Systematic risk * Inflation rate	-1153657.	479342.9	-2.406747	0.0186	
	Unsystematic risk * Inflation rate	-934633.6	542344.8	-1.723320	0.0491	
Balanced	Constant	-32501217	61125236	-0.531715	0.5963	R-squared
	Operating expense	0.298777	0.662260	0.451147	0.0350	0.558197
	Fund size	0.144451	0.047497	3.041281	0.0031	Adjusted R-squared
	Systematic risk	34830201	31190331	1.116699	0.0262	0.513012
	Unsystematic risk	14981275	31115952	0.481466	0.0314	Prob(F-statistic)
	Inflation rate	5154691.	7625258.	0.676002	0.0500	0.00000
	Operating expense * Inflation rate	0.065732	0.080962	0.811888	0.0410	
	Fund size * Inflation rate	-0.016211	0.005547	-2.922260	0.0044	
	Systematic risk * Inflation rate	-4467499.	3995058.	-1.118256	0.0265	
	Unsystematic risk * Inflation rate	-2424165.	4020311.	-0.602980	0.0481	

Source: Study data (2020)

Table 4.8 illustrates the introduction of inflation as a moderator. The coefficients of interest are those of the interaction terms. The coefficients of all the interaction terms for

operating expenses, fund size, systematic risk and unsystematic risk in the equity fund are significant. In Table 4.7, the coefficient of inflation for the equity fund is insignificant. These scenarios are compared to the decision making criteria in Table 3.1. The null hypothesis that inflation has no moderating effect on the relationship between operating expense, fund size, systematic risk, unsystematic risk, and the performance of unit trust funds in Kenya is rejected at the significance levels of 0.05 for the equity fund. For this reason, inflation has a moderating effect on the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of equity fund in Kenya.

The coefficients of interaction in money market fund indicate that operating expense, fund size, systematic and unsystematic risks are all significant. Table 4.7 shows the co-efficient of inflation in the money market fund is insignificant. The scenario for the money market fund is compared to the decision criteria in Table 3.1. The null hypothesis that inflation has no moderating effect in the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of unit trust funds in Kenya is rejected. Hence inflation has a moderating effect on the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of money market fund in Kenya.

Bond fund coefficient of interaction in Table 4.8 shows operating expense, fund size, systematic risk and unsystematic risk are significant. The co-efficient of inflation in Table 4.7 in the bond fund is insignificant. Comparison is made on the bond fund scenarios to the decision making criteria in Table 3.1. The study rejects the null hypothesis that inflation has no moderating effect in the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of unit trust funds in Kenya at

the significance levels of 0.05. For this reason, inflation has a moderating effect on the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of the bond fund in Kenya.

On the other hand, a balanced fund has all coefficients of interaction significant, and the coefficient of inflation in Table 4.7 is insignificant. The balanced fund Scenarios are compared to the decision making criteria in Table 3.1. The null hypothesis that inflation has no moderating effect in the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of unit trust funds in Kenya is rejected at the significance levels of 0.05. For this reason, inflation has a moderating effect on the relationship between operating expense, fund size, systematic risk, unsystematic risk and performance of the balanced fund in Kenya. These findings are consistent with lemantile (2017), who observed a negative effect on performance and contradicts Mohammadreza and Esmaeel (2013), who observed a positive effect of inflation on performance.

Table 4.9: Summary of the moderating effect of inflation on the relationship between fund characteristics and performance of unit trust funds

Analysis	Parameter	Result	Decision
Step one Equation 3.3a – 3.3d inflation as an explanatory variable for equity, money market, bond and balanced funds respectively	Coefficient of inflation	Insignificant coefficient of inflation	Inflation can moderate the relationship between fund characteristics and performance of equity, money market, bond and balanced unit trust funds in Kenya
Step two Equation 3.4a -3.4d, Inflation as a	Coefficient of inflation	Significant coefficient of inflation	Inflation moderates the relationship between fund characteristics and performance of equity, money market, bond

	Coefficient of interaction	Significant coefficients	

Source: Study data (2020)

Table 4.10: Summary of Hypothesis Testing

Null hypothesis	Fund	Result	Decision
H_{01}: Operating expenses have no significant effect on performance of unit trust funds in Kenya.	Equity	P = 0.0023 < (0.05) β = -1.64E+09	Reject H_{01}
	Money Market	P = 0.0000 < (0.05) β = -1.44E-18	Reject H_{01}
	Bond	P = 0.0000 < (0.05) β = 2.10E-16	Reject H_{01}
	Balanced	P = 0.0000 < (0.05) β = 9.34E-18	Reject H_{01}
H_{02}: Fund size has no significant effect on performance of unit trust funds in Kenya.	Equity	P = 0.0000 < (0.05) β = 3.35E-1	Reject H_{02}
	Money Market	P = 0.0000 < (0.05) β = 5.61E-13	Reject H_{02}
	Bond	P = 0.0000 < (0.05) β = 7.52E-14	Reject H_{02}
	Balanced	P = 0.0000 < (0.05) β = 3.40E-13	Reject H_{02}
H_{03}: Systematic risk has no significant effect on performance of unit trust funds in Kenya.	Equity	P = 0.8172 > (0.05) β = 0.023482	Fail to Reject H_{03}
	Money Market	P = 0. 7289 > (0.05) β = -63.51673	Fail to Reject H_{03}
	Bond	P = 0. 0255 < (0.05) β = 0.009024	Reject H_{03}
	Balanced	P = 0. 0322 < (0.05) β = 70736.73	Reject H_{03}
H_{04}: Unsystematic risk has no significant effect on	Equity	P = 0. 0028 < (0.05) β = -5.06E-11	Reject H_{04}
	Money	P = 0. 0495 < (0.05)	Reject H_{04}

	performance of unit trust funds in Kenya.	Market	β = 3.32E+09	
		Bond	P = 0. 8812 > (0.05) β = 7.62E-18	Fail to Reject H_{04}
		Balanced	P = 0. 9796 > (0.05) β = 11.59092	Fail to Reject H_{04}
H_{05}:	Inflation has no significant moderating effect on the relationship between operating expenses, fund size, systematic risk, unsystematic risk and Performance of unit trust funds in Kenya.	Equity	Moderation effect	Reject H_{05}
		Money Market	Moderation effect	Reject H_{05}
		Bond	Moderation effect	Reject H_{05}
		Balanced	Moderation effect	Reject H_{05}

Source: Study data (2020)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study with a specific focus on the statement of the problem, study objectives, the methodology used, and findings. Also, the chapter documents conclusions derived from empirical findings on each of the specific objectives. This chapter further suggests policy recommendations resulting from the conclusions made. Finally, the chapter briefly documents limitations encountered and areas for further study arising from the gaps that were outcomes of the study effort.

5.2 Summary

The background presented in the study culminated to the statement of the problem. The study formulated research objectives to address the Research problem. The underpinning theories of the study were documented and relevant literature on the study variables was reviewed. A conceptual framework was developed to show the relationship between the variables. The research methodology of the study is given and explanation for choosing the positivism philosophy. Non-experimental explanatory research design and a census of sixteen unit trust firms were taken. Panel data for the period 2005 to 2017 was used for analysis. Data was obtained from the financial statements of each unit trust, CBK, KNBS. The following is a summary of the findings.

The first objective of the study sought to establish the effect of operating expenses on the performance of unit trust funds. The study revealed that there was a statistically significant effect of operating expenses on the performance of all unit trust funds in all the funds. The findings also indicated a significant negative effect of operating expenses

and performance of unit trust funds in equity and money market funds. Further, the study found a significant positive effect of operating expenses and performance of unit trust funds in bond fund and balanced fund. The second objective of the study sought to determine the effect of fund size on the performance of unit trust funds. The study found a statistically significant effect of fund size on the performance of all unit trust funds. Further, the study established that the effect was positive in all funds.

Thirdly, the study sought to examine the effect of systematic risk on the performance of unit trusts. The market Beta was used as a proxy for systematic risk. The study found that there was a statistically significant effect of systematic risk on performance of unit trust funds in equity fund, money market fund and bond fund. The study also found an insignificant effect between systematic risk and performance of unit trust funds in balanced fund. The effect was positive only in balanced fund.

Fourthly, the study sought to determine the effect of unsystematic risk on the performance of unit trust funds. The study found a statistically significant effect of unsystematic risk on performance of unit trust funds in money market fund and bond fund. Further the study found an insignificant effect of unsystematic risk on performance of unit trust funds in equity fund and balanced fund. The effect however was negative in equity fund, money market fund and bond fund. The effect was positive in balanced fund.

Lastly, the study sought to investigate the moderating effect of inflation on the relationship between fund characteristics and the performance of unit trust funds. The study findings revealed that inflation significantly moderates the relationship between fund characteristics and the performance of unit trust in all funds.

5.3 Conclusion

In view of the findings of the study, the study concludes that fund characteristics have varied effects on the performance of unit trust funds in Kenya. Firstly, in light of the test of H_{01}, the study found out that operating expenses have a statistically significant effect on the performance of unit trust funds. The findings also indicated a negative and significant effect on performance in equity and money market funds but a positive and significant effect on performance in the bond and balanced funds. This negative effect means that performance of equity and money market unit trust funds will increase with decrease in operating expenses. The positive effect on the other hand indicates that performance of bond and balanced unit trusts will increase with increase in operating expenses.

Secondly, the test of H_{02} found out that fund size has a statistically significant effect on the performance of all unit trust funds. In addition, the effect is positive for all funds. This means that performance of unit trusts increase as the size of the fund increase. Based on these findings the study concluded that increasing fund size, will have a positive effect on the performance of all unit trusts.

The test of H_{03} found out that systematic risk has a statistically significant effect on the performance of unit trust in equity fund, money market fund and bond fund. Systematic risk has no significant effect on performance of unit trust in balanced fund. The effect is negative in equity fund, money market fund and bond fund implying that the performance of unit trust funds increase with decrease in systematic risk in these funds. The effect is positive in balanced fund and this implies that performance of balanced fund increases

with increase in systematic risk. This study therefore concludes that the effect of systematic risk on performance of unit trust funds is not uniform for all funds.

The study on testing H_{04} found a statistically significant effect of unsystematic risk on performance of unit trusts in money market fund and bond fund. Further the study found statistically insignificant effect of unsystematic risk on performance of unit trust in equity fund and balanced fund. The effect was negative in equity fund, money market fund and bond fund. This implies that performance of unit trust funds increase with decrease in unsystematic risk in equity fund, money market fund and bond fund. The effect is positive in balanced fund and hence performance of balanced unit trust fund increases with increase in unsystematic risk. The study concludes therefore that unsystematic risk explains the performance of unit trust in money market fund and bond fund. Further, the lower the unsystematic risk the better the performance of unit trust in equity fund, money market fund and bond fund.

Finally, the result of H_{05}, found out that inflation statistically moderates the relationship between fund characteristics and performance of unit trust funds. Hence the study concludes that inflation moderates the relationship between fund characteristics and performance of unit trust funds.

5.4 Recommendations

In light of the findings of the study and conclusions thereof, the study documents various recommendations to potential beneficiaries of this empirical work. Firstly, the study recommends that the capital market authority should continue monitoring the unit trusts

and continue enforcing policies on the regulation of unit trusts. Additionally the study recommends that, the regulator should come up with a threshold for operating expenses within which unit trusts can charge based on various funds. There should also be policies regulating the amount of investment to be made for each fund in order to capitalise on the returns.

Investment firms and financial analysts have a lot to learn from the findings of the study. First the study informs on how the various fund characteristics affect the performance of various unit trust funds. This is important to both analysts and investments because the findings will help them correctly forecast future movements on returns from unit trust funds given the expected trends of fund characteristics. In addition, they should be able to formulate policies to counter and accordingly advise their clients on fund characteristics which affect the performance of unit trust funds.

Individual investors also have a lot to learn from the findings of the study. They usually endeavour to diversify all the risks associated with their asset portfolios. With the findings of this study, investors will be correctly informed on how to counter the expected movement of systematic risk in the market. The study findings have shown that decrease in systematic risk on equity fund, money market fund and bond fund increase performance of these unit trust funds and hence any changes in this trend can be used by investors to earn more returns or avoid more losses.

The scholars in finance should incorporate the results of the study while undertaking other studies related to fund characteristics and performance of unit trust funds thus enriching their findings. In addition, the study broadens their scope on applications of

various finance theories. This study examines all the major funds operating in the Kenyan market.

5.5 Implication of the Study

The findings of this study imply that, the Government through its regulator the Capital Market Authority should be wary of the fund characteristics of each unit trust fund. This is because, the study findings have indicated that there is a significant effect of operating expense and fund size on the performance of unit trust funds in Kenya. In addition systematic risk and unsystematic risks have significant effect on some of the funds and consequently affects the performance of unit trust funds.

Additionally this study implies that, inflation has a significant moderation effect on the relationship between fund characteristics and performance of unit trust funds in Kenya. This means that inflation moderates the performance of unit trust funds. The fiscal and monetary policy implementers should seek to maintain desirable levels of inflation based on performance of the economy. Finally the study also implies that the investors should be keen on the trends of fund characteristics; operating expenses, fund size, systematic risk and unsystematic risk, as they can help them predict the direction of the performance of unit trust funds.

5.6 Limitations of the Study

This study faced some precincts that are worthy noting. This study used secondary and this presents some limitations associated with secondary data sources. Firstly, the use of secondary data presented some risk of errors of the data which may lead to wrong findings. Secondly, the use of secondary data presented a challenge of quality since the researcher has no control over the quality of data available. To ensure that these

limitations do not affect the findings, the study obtained data from reputable organization such as the Central Bank of Kenya, audited financial statements and Capital Market Authority. The study also experienced impediments in data collection. There was no identical classification of accounting items in some instances. The researcher however, consulted with individual firms to get the uniform classification of the accounting items. Lastly, some targeted unit trust funds had incomplete data either because they had been licensed but had not commenced business or had not mobilized investors. The study only considered those funds that had complete data for at least two years.

5.7 Suggestions for Further Research

The research gaps documented from the research efforts provide some basis for further empirical investigations. Firstly, the study established the effect of fund characteristics on the performance of unit trust funds; a study should be carried to establish the effect of fund characteristics on the growth of unit trusts funds in Kenyan market. Additionally, future researchers should consider establishing the effect of fund characteristics on performance of unit trusts funds based on Sharpe and Treynor indices. Lastly the period of the current study was 2005 to 2017, coinciding with the entire life of unit trust funds. A similar study should be done examining performance semi-annually or quarterly.

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APPENDICES

Appendix I: Research Permit

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
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When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/19/85928/31010** Date: **14th August, 2019**

Anderson Namu Nthimba
Kenyatta University
P.O. Box 43844-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Fund characteristics and performance of unit trusts in Kenya."*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **14th August, 2020.**

You are advised to report to **the County Commissioner, and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

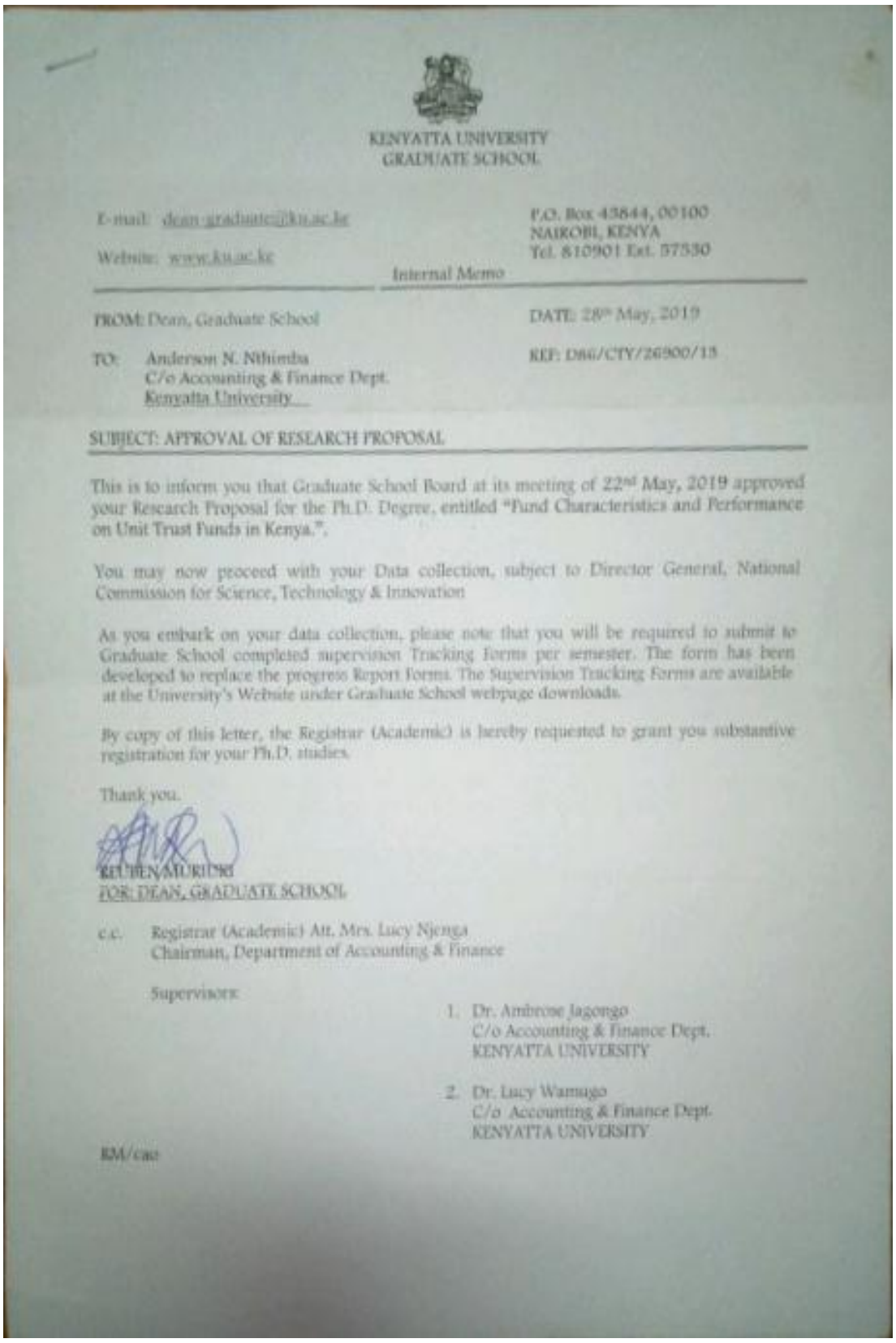
GODFREY P. KALERWA., MSc, MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

Appendix II: Copy of KU Graduate letter



KENYATTA UNIVERSITY
GRADUATE SCHOOL

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P.O. Box 43844, 00100
NAIROBI, KENYA
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Internal Memo

FROM: Dean, Graduate School

DATE: 28th May, 2019

TO: Anderson N. Nthimba
C/o Accounting & Finance Dept.
Kenyatta University

REF: D86/CTY/26900/15

SUBJECT: APPROVAL OF RESEARCH PROPOSAL

This is to inform you that Graduate School Board at its meeting of 22nd May, 2019 approved your Research Proposal for the Ph.D. Degree, entitled "Fund Characteristics and Performance on Unit Trust Funds in Kenya.".

You may now proceed with your Data collection, subject to Director General, National Commission for Science, Technology & Innovation

As you embark on your data collection, please note that you will be required to submit to Graduate School completed supervision Tracking Forms per semester. The form has been developed to replace the progress Report Forms. The Supervision Tracking Forms are available at the University's Website under Graduate School webpage downloads.

By copy of this letter, the Registrar (Academic) is hereby requested to grant you substantive registration for your Ph.D. studies.

Thank you.

REUBEN MURIUKI
FOR: DEAN, GRADUATE SCHOOL

c.c. Registrar (Academic) Att. Mrs. Lucy Njenga
Chairman, Department of Accounting & Finance

Supervisors:

1. Dr. Ambrose Jagongo
C/o Accounting & Finance Dept.
KENYATTA UNIVERSITY

2. Dr. Lucy Wamugo
C/o Accounting & Finance Dept.
KENYATTA UNIVERSITY

RM/cao

Appendix III: List of Funds in Unit Trusts in Kenya

1. African Alliance Kenya Unit Trust
    i) Africa Alliance Kenya Shilling Fund
    ii) Africa Alliance Kenya Fixed Income Fund
    iii) Africa Alliance Kenya Managed Fund
    iv) Africa Alliance Kenya Equity Fund
2. Old Mutual Unit Trust
    i) Old Mutual equity fund
    ii) Old Mutual money market fund
    iii) Old Mutual balanced fund
    iv) Old Mutual east Africa fund
    v) Old Mutual bond fund
3. British-American Unit Trust
    i) British-American Money Market Fund
    ii) British-American Income Fund
    iii) British-American Balanced Fund
    iv) British-American Managed Retirement Fund
    v) British-American Equity Fund
4. Stanbic Unit Trust
    i) Stanbic Money Market Fund
    ii) Stanbic Fixed Income Fund
    iii) Stanbic Equity Fund
    iv) Stanbic Balanced Fund
5. Commercial Bank of Africa Unit
    i) Commercial Bank of Africa Money Market Fund
    ii) Commercial Bank of Africa Equity Fund
6. Zimele Unit Trust Scheme
    i) Zimele Balanced Fund
    ii) Zimele Money Market Fund
7. Madison Asset Unit Trust Funds
    i) Madison Asset Equity Fund
    ii) Madison Asset Balanced Fund
    iii) Madison Asset Money Market Fund

iv) Madison AssetTreasury Bill Fund

v) Madison Asset Bond Fund

8. Standard Investment Trust Funds

i) Standard Investment Equity Growth Fund

ii) Standard Investment Fixed Income Fund

iii) Standard Investment Balanced Fund

9. CIC Unit Trust Scheme

i) CICMoney Market Fund

ii) CIC Balanced Fund

iii) CICFixed Income Fund

iv) CICEquity Fund

10. ICEA Unit Trust Funds

i) ICEAMoney Market Fund

ii) ICEAEquity Fund

iii) ICEAGrowth Fund

iv) ICEABond Fund

11. Dyer and Blair Unit Trust Scheme

i) Dyer and Blair Diversified Fund

ii) Dyer and Blair Bond Fund

iii) Dyer and Blair Money Market Fund

iv) Dyer and Blair Equity Fund

12. Amana Unit Trust Funds Scheme

i) Amana Money Market Fund

ii) Amana Balanced Fund

iii) Amana Growth Fund

i) und

13. Genghis Unit Trust Funds

i) GenCapHazinaFund

ii) GenCapEneza Fund

iii) GenCapHela Fund

iv) GenCapIman Fund

v) GenCapHisa Fund

14. NaboAfricaFund

i) Nabo Africa Money Market Fund

ii) Nabo Africa Balanced Fund

iii) Nabo Africa Fixed Income Fund

iv) Nabo Africa Equity Fund

15. Equity Investment Bank Unit Trust

i) Equity Investment Bank Money Market Fund

ii) Equity Investment Bank Balanced Fund

16. Sanlam Unit Trust Scheme

i) Sanlam Money Market Fund

ii) Sanlam Dividend Plus Fund

iii) Sanlam Balances Fund

Source: CMA (2017)

Appendix IV: Data Entry Sheet

Name of the unit trust firm .....

Type of Fund .....

Year	Total Earnings	Total Assets	Total Expenses	No. of shares	Inflation Rates	Interest of 91day T-bill	NSE Share Index
2005							
2006							
2007							
2008							
2009							
2010							
2011							
2012							
2013							
2014							
2015							
2016							
2017							

Source: Researcher (20209)

Appendix V: Test for Heteroscedasticity

Equity fund

Panel Cross-section Heteroskedasticity LR Test
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	11.12935	13	0.6000

LR test summary:

	Value	df
Restricted LogL	-289.0458	93
Unrestricted LogL	-283.4811	93

Money market fund

Panel Cross-section Heteroskedasticity LR Test
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	2.152801	13	0.9997

LR test summary:

	Value	df
Restricted LogL	-413.7048	102
Unrestricted LogL	-412.6284	102

Bond fund

Panel Cross-section Heteroskedasticity LR Test
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	31.63484	11	0.0709

LR test summary:

	Value	df
Restricted LogL	-251.0164	80
Unrestricted LogL	-235.1990	80

Balanced Fund

Panel Cross-section Heteroskedasticity LR Test
Null hypothesis: Residuals are homoskedastic

	Value	df	Probability
Likelihood ratio	95.3945	13	0.1506

LR test summary:

	Value	df
Restricted LogL	--402.469	94
Unrestricted LogL	-352.771	94

Source: Study Data (2020)