EFFECT OF PORTFOLIO DIVERSIFICATION ON FINANCIAL PERFORMANCE OF PENSION FUNDS IN KENYA

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DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed: _____Date: ____23rd Oct 2022_____

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This research project has been submitted for examination with my approval as the University Supervisor.

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DEDICATION

I wish to dedicate this work to my beloved husband and children for the moral and financial support through the entire period.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller
ANOVA	Analysis of Variance
APT	Arbitrage Pricing Theory
CAPM	Capital Asset Pricing Model
GDP	Gross Domestic Product
HHI	Herfindhal-Hirschman index
MPT	Modern Portfolio Theory
NSE	Nairobi Securities Exchange
OECD	Organization for Economic Cooperation and Development
RBA	Retirement Benefits Authority
ROA	Return on Assets
ROI	Return on Investments
UK	United Kingdom
VIF	Variance Inflation Factors

ABSTRACT

The ability of pension funds to earn adequate revenues to meet their costs and benefit commitments in the medium and long term is reflected in their financial performance. Over the last few decades, the financial performance of pension funds has received a lot of attention in many jurisdictions, particularly among policymakers. This has been ascribed to the fact that pension funds are a worldwide concern since people in both the formal and informal sectors around the world will retire or leave employment at some point in their life. The main intention of this research was to examine portfolio diversification influence on performance of pension funds in Kenya. Modern portfolio theory, arbitrage pricing theory and the capital asset pricing model were adopted to anchor the study. A descriptive research design was used in this research. The target population was the 1340 pension funds in Kenya. Secondary data was obtained from Retirement Benefits Authority and individual pension funds annual reports for a 5 year period (2017 to 2021). Upon collection of the data, inferential as well as descriptive statistics generated included frequencies and percentages and simple and multiple linear regression respectively. The regression results produced an R square of 0.4739 which implies that 47.39% of the changes in performance among pension funds in Kenya can be explained by the four selected variables for this study. The overall model was found to be statistically significant as exhibited by a p value of 0.000 which was less than 0.05. The study further revealed that portfolio diversification had a positive and significant effect on performance of pension funds in Kenya. Fund liquidity and fund size also had positive and significant effect on performance of pension funds in Kenya. This study concluded that portfolio diversification, fund liquidity and fund size are essential for pension funds' performance. The study recommends that pension funds' policy makers should come up with policies that increase portfolio diversification as this will lead to an increase in financial performance. The study further recommends that management and directors of pension funds should develop strategies aimed at increasing their fund liquidity and fund size as this leads to a rise in financial performance. Future researchers should focus on other determinants of financial performance among pension funds in Kenya.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

In line with Sunderam, Viceira and Ciechanover (2016), portfolio diversification is among the essential aspects that shareholders are trying to find prior to making resolution to venture in investments because of their outright association with overall monetary outcome. Philips (2014) pointed that business people venturing into diversified investments considerably lessen their subjection to unbearable possibilities with the aid of preserving a properly differentiated portfolio of asset and stocks. Though traders tend to have adapted the attitude of diversification for the portfolios of local stocks, they nevertheless appear hesitant to take up various global portfolio in spite of the vast readily available investments of economical funding for investing worldwide and the properly articulated remarkable advantages of worldwide portfolio diversification at short-term spheres (Van Loon & Aalbers, 2017).

The study drew support from Modern Portfolio Theory (MPT), Arbitrage Pricing Theory (APT) and the Capital Asset Pricing Model (CAPM), all of which support the analysis of portfolio diversification and pension fund financial performance. According to MPT, investors seek higher returns over lesser returns and are also risk averse. This is due to the fact that higher returns allow the investor to have more for consumption and, when given the option to invest, they will choose companies with lower risk (Markowitz, 1952). Diversification helps to eliminate unsystematic risk. According to the APT, both fundamental and statistical factors influence market returns. The return of a specific asset is a linear function of factors in the economic environment that affect all securities. CAPM forecasts a security's expected rate of return based on statistics about the market's expected rate of return and also takes into

account the market risk and systematic risk. Sharpe (1964) observed that CAPM elaborates why some assets have greater returns on them and why projected returns differ over a given period.

This study focused on pension funds in Kenya. According to Retirement Benefits Authority (2020) data, over Sh700 billion in assets were held by over 3000 registered and unregistered pension plans in Kenya. The financial contributions made by these pension plans amounted to 51.4% of total GDP (forbes, 2020). Investment returns from pension plans varied from 6.7% to 15%, with an average return of 10.67%, according to RBA 2020 statistics. Percentage-wise, the average was 7.87%. Investment returns for private pensions were just 16.33 %. According to RBA investment reports from 2019 and 2020, roughly 62.3% of all Kenyan pension plans underperformed the market. The current study aimed to establish whether portfolio diversification can be used to explain the performance of the pension funds in Kenya.

1.1.1 Portfolio Diversification

Portfolio diversification is a method designed to reduce or minimize investment risks by mixing a variety of investments (Stiroh, 2004). Portfolio diversification is the exercise of distributing finances throughout various extraordinary investments (Reilly & Brown, 2012). Diversification denotes the ways of minimizing chances of investment risks by investing in a ramification of assets. In case the values of properties stagnate in prices in ideal synchrony, differentiated portfolios could have lower chances of experiencing losses as compared to weighted average threat of its constituent assets, and frequently much less risk chances than the least risky of its counterparts (Sagi, 2020).

Diversification by products or markets is aimed at making a firm enjoy economies of scale and improved efficiency that leads to improved financial performance (Lin & Nienhaus, 2015). The aim of portfolio diversification to allocate resources to different assets classes, markets and products to spread the diversifiable risks. The diversification strategy gives the firm an opportunity to hold optimal portfolios that ensures that poorly performing assets are compensated by better performing assets given the economic situation being experienced (Aw, Jiang, Sivin & Soe, 2018). Portfolio diversification thus aims at according a firm a variety of income sources such that an economic event affecting an industry does not have to affect all industries at the same time in the same manner (Ibrahim & Kaka, 2007).

Theoretically, portfolio diversification is determined by the allocation of the diversifiable risks across assets classes such that the systematic risk is zero or negligible. A portfolio is said to be optimally diversified when the existing risk facing the entire portfolio is just the systematic risk (Bergin & Pyun, 2016). Empirical studies have tended to adopt different measures of portfolio diversification. Kamwaro (2013) and Kimeu (2015) measured portfolio diversification using amount of investment in bonds, equity, real estate and mutual funds. Mulwa and Kosgei (2016) and Luu, Nguyen and Vu (2019) adopted Herfindhal-Hirschman index (HHI) to measure income and geographical diversification among firms. The current study adopted the measure used by Mulwa and Kosgei (2016) and Luu, Nguyen and Vu (2019) where portfolio diversification was measured by Herfindhal-Hirschman index (HHI).

1.1.2 Financial Performance

Financial performance refers to the ability of a corporation to attain a variety of its financial goals, like profitability (Almajali, Alamro, & Al-Soub, 2012). Financial performance refers to the level up to which an organization has met or even exceeded its financial benchmark. Financial performance demonstrates the level to which a firm meets its financial objectives. Financial performance depicts how a corporation generates money through using assets, and as a result, it aids decision making for stakeholders (Baba and Nasieku, 2016). As per Nzuve (2016), the health of any firm is mostly determined by the financial performance, that is an indication of the strengths as well as the shortcomings of such a firm. Furthermore, for regulatory purposes, the government together with regulatory agencies have a concern on the performance of corporations.

Financial performance is critical since it is used to show an organization's resource efficiency and effectiveness. This, in turn, has the potential to raise an organization's worth (Gartenberg, Prat & Serafeim, 2019). Financial performance data is also used by investment analysts to assess an entity's ability to generate revenue and expand, both of which are important for future growth. Financial performance is critical in determining net income and analysing a company's financial risk. As a result, the nature of a pension fund's real estate investment can have a substantial impact on its members' overall financial wellbeing during their retirement years. As a result, pension funds must make numerous estimates in order to determine their overall financial performance, including forecasting future salary increments for covered employees, determining the actuarial rate to be used in determining the amount of pension payments, and calculating the return on assets accumulated in the pension fund (Batchimeg, 2017).

According to Kigen (2016), a variety of financial ratios can be used to assess the financial performance of pension plans. Financial ratios are defined as the relationship between two financial balances or calculations. Return on assets and return on investments are two critical financial indicators that can be used to evaluate the financial effectiveness of pension funds. Return on assets (ROA) is the operational profit quotient and total asset ratio used to calculate an organization's earnings from all financial resources (Kigen, 2016). Return on investment (ROI), on the other hand, is a statistic that indicates how well management has investment the available funds. The current study used ROI as a measure of financial performance.

1.1.3 Portfolio Diversification and Financial Performance

The ability of pension funds to earn adequate revenues to meet their costs and benefit commitments in the medium and long term is reflected in their financial performance. This can be aided by associated sectoral reforms (Zhang, Cai, Liu & Kutan, 2018). Over the last few decades, the financial performance of pension funds has received a lot of attention in many jurisdictions, particularly among policymakers. This has been ascribed to the fact that pension funds are a worldwide concern since people in both the formal and informal sectors around the world will retire or leave employment at some point in their life (Zhang et al., 2018).

According Nassar (2018), in order to achieve efficient financial performance, pension funds must always be professionally managed and operate in a controlled framework. Professional management services are always offered at a cost, which has a detrimental influence on pension funds' overall financial performance. Members' contributions are the most important source of income for the pension plans and this should be complemented by investment income. Better investment returns from

pension funds can help organizations attract and keep senior personnel, according to a study conducted in the United Kingdom (UK). Furthermore, strategic asset allocation is a hot topic among pension plans around the world as high or low returns are a result of investment choices made by the funds' managers (Nassar, 2018).

Hlavac (2016) examined the financial returns of Czech private pension plans and compared them to those of other Central and Eastern European countries. From the study, financial returns of these schemes were shown to be primarily influenced by member contributions and operating costs incurred for provision of management services. According to studies conducted throughout the world, operational costs, amount of financial contributions, and other elements that impact the financial performance of pension plans are primarily internal and, more significantly, trustee-related. Various scholars have noted external factors such as fund managers' investment choices, risk preferences associated with those choices, and the legal environment in which pension funds operate (OECD, 2016).

1.1.4 Pension Funds in Kenya

The Retirement Benefits Authority (RBA) regulates the pension industry in Kenya. RBA was established through an act of parliament; the Retirement Benefits Act of 1997. The pension industry is categorized into four broad schemes namely, National Social Security Fund, Civil Service Pension Scheme, Occupational Retirement Schemes and Individual Retirement Schemes (RBA, 2020). Acts of parliament established the National Social Security Fund and the Civil Service Pension Scheme which are open to all government employees, teachers, and formal sector workers in enterprises, respectively. Occupational Retirement Schemes comprise of employees from companies offering such plans while Individual Retirement Schemes comprise

of formal or informal sector employees who join voluntarily. The latter two schemes are governed by their respective trust deeds and rules.

To protect pensioners' investments, the RBA requires fund managers to adhere to investing guidelines that define the allowable asset classes with the maximum percentage exposure for each. As a result, the rules provide an overview of the risk profiles associated with the major asset classes in which pension fund managers invest. Oversight of the pension fund has shifted away from compliance based towards risk based supervision in recent years. To this end, RBA provides asset class suggestions rather than recommending specific assets for investment. In selecting and developing a well-diversified portfolio, the pension system has the discretion to identify and select the most appropriate assets to maximize the fund's returns (Ngugi, Njuguna & Wambalaba, 2018).

The Kenyan pension fund sector has grown at an exponential rate in recent years, according to Deloitte (2016), and this trend is expected to continue. Pension funds are increasingly investing in real estate due to the promise of higher returns. As investor confidence has grown, Kenya has seen and experienced a surge in real estate investments. The primary motive for pension funds to invest in real estate is diversification with the goal of increasing their return on investment (Kigen, 2016).

1.2 Research Problem

Prudent investment portfolio management ensures effectiveness, liquidity and safety within the use of resources among different objectives. According to Soderblom (2011), the principal reason of holding diversified portfolio rather than a single investment is to maximize return while minimizing risk. Choi and Kotrozo (2006) pointed out that investment diversification is important in that it reduces the level of

systematic risk incidental to a portfolio. At every decision purpose, the portfolio manager has a list of investment opportunities at hand and may decide whether to require a foothold supported market conditions and additionally the assessment of determinants (Morris, 2010). Diversification offers secure and less risky earnings, economies of scope and scale, and the potential to leverage efficiency (Jonava inc, 2009).

In Kenya, the pension fund sector is estimated to cover only 15 percent of the country's entire work force with investments accounting for roughly 18 percent of GDP (Muli & Jagongo, 2019). This means that about 85% of Kenya's workers are not saving for retirement (RBA, 2019). The overall financial performance of Kenyan pension funds, however, has recently been plagued by a slew of issues. According to Ametefe (2018), investment decisions have contributed to the fall in the financial performance of Kenyan pension funds, particularly widespread real estate investment, despite the large benefit of predictable long-term returns owing to capital appreciation. Portfolio diversification by pension funds has been shown to be poor, inefficient, less transparent, and laborious, resulting in bureaucracy and a high risk of corruption, all of these factors have had a considerable impact on these pension funds' financial performance (Muli & Jagongo, 2019).

Globally, there exist empirical studies in this area but they exhibit conceptual, contextual and methodological research gaps. Hlavac (2016) performed a worldwide study to determine portfolio diversification methods employed by Czech investment funds and their financial performance. This research focuses on investment funds, which are not the same as pension funds. Mercer (2018) studied the financial growth of occupational retirement benefit schemes in Australia. The research found a

statistically significant link between fund liquidity and ROI. The study did not explain how portfolio diversification influenced pension scheme financial performance, leaving a conceptual gap. The Tanzanian social security programs were studied by Sabugo (2017), who looked at the factors that influence investment income growth. Members' contributions, benefits payments, and the value of social security schemes were found to have a positive effect on investment income in social security schemes. The study presents a conceptual gap as portfolio diversification was not taken into account.

Locally, Ichingwa and Mbithi (2017) conducted an investigation of the impact of total contributions on the performance of Kenyan pension plans. The total amount of contributions has a considerable and beneficial impact on the financial performance of the pension scheme. The study focused on only one variable and therefore other determinants such as portfolio diversification were not taken into account. Namusonge, Sakwa, and Gathogo (2017) conducted research on asset mix on the financial performance of registered occupational pension schemes in Kenya. The study reveals a conceptual gap as it analyzed the various assets separately without taking into account the level of diversification. Keli (2021) attempted to ascertain how the performance of pension funds in Kenya is impacted by real estate investments. The research presents a conceptual gap as portfolio diversification was not considered.

The current study is motivated by the performance challenges facing pension funds in Kenya. Effective portfolio diversification mechanism is hypothesized to enhance financial performance. Although there are previous studies in this area, the studies have not addressed the effect of portfolio diversification on financial performance

among pension funds in Kenya and therefore a conceptual gap. The current study leveraged on this knowledge gap by answering the research question; what is the effect of portfolio diversification on financial performance of pension funds in Kenya?

1.3 Research Objective

The objective of this research was to determine the effect of portfolio diversification on financial performance of pension funds in Kenya.

1.4 Value of the Study

The conclusions of this research will contribute to already existing theoretical as well as empirical literature on portfolio diversification and financial performance. The findings will also help in theory development as they will offer insights on the shortcomings and relevance of the current theories to the variables of the study. Subsequent studies may also be performed on the basis of further research recommendations.

This study will be particularly valuable for stakeholders in the pension sector as it provides essential data for investments management. These stakeholders include pension scheme trustees, members, fund managers and regulatory bodies. The management of pension funds will benefit the most from this because it shows how they might improve their pension plans' financial performance by making investment selections.

The outcomes of this study will be used to guide and formulate policies by the government and other policymakers. The findings will serve as a reference for Kenyan pension funds and other financial institutions in making investment decisions

that will increase their financial performance and hence contribute to the sector's development.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter presents a comprehensive investigation of the conceptual foundations of portfolio make-up and return on investment. In addition, it provides a summary of earlier empirical research, draws attention to knowledge gaps, and wraps up with a conceptual framework and hypotheses that suggest the predicted relationship between the variables that were researched.

2.2 Theoretical Framework

This section examines the theories which underpin the study of portfolio diversification and financial performance. The study reviewed the modern portfolio theory, arbitrate pricing theory and capital asset pricing theory.

2.2.1 Modern Portfolio Theory

This is the anchor theory of the current study. The theory was proposed by Markowitz (1952) in his publish for the portfolio mixture. This theory put an emphasis on how it is possible to maximize expected returns by creating weighted portfolio utilizing risks thresholds. The theory stated that institution may build portfolio that optimize anticipated return at specified risk levels. This theory states that profit can be maximized by choosing proportions of different investments that will lower the investment risk level.

Unsystematic risks and systematic risks were defined by the theory as the two categories of hazards that investors should be aware of. Unsystematic risk is linked to the degree of volatility of a single investment, whereas systematic risk is inherent in market volatility across the board or in particular segments of it. Investors are

consequently advised to combine their portfolios by ensuring that any specific risks incurred by one investment are mitigated by fewer specific risks in other investments (Cuthbertson, 2004).

This theory is critiqued by behavioural finance theorists for its assumptions and failure to consider the role of human behaviour in maximizing returns. According to Brueggeman and Fisher (2011), macroeconomic variables generally influence the business environment within the economy. An environment of volatile economic variables including inflationary pressures and volatile exchange rates, infer that returns to businesses and financial firms in particular shall vary. Unstable returns therefore dominate performances of financial firm like environment fluctuates hence affecting their financial performance. Policy makers should thus be keen on macro-economic variables as they can have an influence on financial performance. This research has contribution to the current research as it identifies macro-economic factors as variables that can influence financial performance. The theory is relevant as it relates variables like interest rates, exchange rates, unemployment and inflation with financial performance of firms or sectors.

2.2.2 Arbitrage Portfolio Theory

Arbitrage Portfolio Theory (APT) was coined by economist Stephen Ross (1976). It explains the relationship between portfolio asset returns and the linear combination of numerous independent macroeconomic variables. This theory is a one-period model that predicts an asset's returns using different risk variables and the same asset. Its focus is different from typical investment analysis and it's best suited for managing enormous pools of money. It is crucial to know how much risk your company is exposed to before deciding on the appropriate degree of risk (Ross, 1976). APT's core

discovery is that the long-term average returns of financial assets are determined by a few stable factors.

Arbitrage Portfolio Theory acknowledges the numerous elements that contribute to daily stock and bond price volatility, but concentrates on the major dynamics affecting huge portfolios' aggregate assets (Kim, Korajczyk & Neuhierl, 2020). By recognizing these forces, we can have a better sense of how they affect portfolio results. The ultimate goal is to improve overall portfolio design and performance by gaining a better grasp of portfolio construction and evaluation.

Because it does not rely on predicting how the market will operate, arbitrage pricing theory has been questioned. Instead, it publicly links the price of an asset to the underlying factors that influence it. The problem is that the theory doesn't specify what these components are, thus they have to be discovered through experimentation (Kim, Korajczyk & Neuhierl, 2020). Furthermore, APT is based on three major assumptions: perfect capital market competition, assurance that investors would always want more wealth, and that the stochastic process that creates asset returns can be described as a linear function of a set of risk factors (Reilly & Brown, 2012).

The current study is pertinent to APT since it is modelled in such a way that it isolates and prices assets individually. Real estate is not as smooth as stocks, and it is difficult for an investor to take advantage of a short-term arbitrage opportunity. The pension fund can profit from pricing discrepancies between the beginning and the completion of a real estate project's construction. As a result of capital appreciation, arbitrage opportunities emerge and if taken advantage of, they help to improve the pension fund's financial performance.

2.2.3 Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) was developed by William Sharpe (1964) and John Lintner (1965). The Capital Asset Pricing Model predicts how to assess risk and the expected return-risk relationship. A mean-variance efficient portfolio with the same mean-variance is often used to calculate the CAPM. To explain why some assets have higher expected returns than others, asset pricing theorists employ the CAPM (Rossi, 2016). The portfolio includes risky capital assets that are weighted by their market value, and these portfolios include both classic and non-traditional asset classes such as real estate and commodities. Sharpe (1964) introduces the implications that, regardless of risk preferences, an investor will keep hazardous assets in their portfolio whose individual risk profiles are defined by their covariance with the market and the reward to investors for bearing systematic risk.

CAPM critics argue that the model is oversimplified as a result of its two essential assumptions. The model assumes that investors can borrow or lend any amount of money at a risk-free rate and that the risk-free rate is consistent across all investors regardless of the amount borrowed or lent. Second, all investors have equal expectations, resulting in comparable probability distributions for future returns over the same time span. As a result, CAPM can calculate the risk price and risk measure for a given asset (Elbannah, 2015). There are no taxes or transaction costs associated with the acquisition or sale of assets, no inflation impacts or interest rate adjustments, and the capital markets are in equilibrium, with all investments priced properly.

Despite this, CAPM was important to the current research since it is used to aid decision-making when deciding between different investments and assets in the face of risk and uncertainty. It attempts to explain asset prices while they are in a state of

equilibrium. It is taken into account while purchasing an asset and analyzing the investment portfolio's success. Diversification offers returns that are commensurate with market risk and the possibility for portfolio returns that have a premium above the risk free rate. Diversification also reduces systemic risk. This theory proposes that diversification and financial performance have a positive link.

2.3 Determinants of Financial performance

This section discusses the determinants of financial performance for pension funds. The three determinant of financial performance of pension funds adopted in this study are portfolio diversification, liquidity and fund size. These factors are discussed in the following sections.

2.3.1 Portfolio Diversification

The ability of pension funds to earn adequate revenues to meet their costs and benefit commitments in the medium and long term can be aided by portfolio diversification (Zhang, Cai, Liu & Kutan, 2018). Over the last few decades, the financial performance of pension funds has received a lot of attention in many jurisdictions, particularly among policymakers. This has been ascribed to the fact that pension funds are a worldwide concern since people in both the formal and informal sectors around the world will retire or leave employment at some point in their life (Zhang et al., 2018).

According Nassar (2018), in order to achieve efficient financial performance, pension funds must always be professionally managed and operate in a controlled framework. Professional management services are always offered at a cost, which has a detrimental influence on pension funds' overall financial performance. Members'

contributions are the most important source of income for the pension plans and this should be complemented by investment income (Chirchir, 2007; Nyakundi, 2014).

2.3.2 Fund Liquidity

To determine a corporation's liquidity, we examine any money the company has on hand but are not producing interest. According to Annort, Bernstein, and Hall (1991), institutions must deal with their massive cash reserves. The company's liabilities cannot be compared to the company's cash reserves since the danger of idle cash is larger. It is likely that a decrease in interest rates in the economy would result in a reduction in the interest rate charged by the bank in contrast to the income received from the stock market and from the sale of government securities. A consequence of this might be that the pension fund is unable to satisfy its financial responsibilities. Because of the very poor profits that may be generated by sitting on cash, it is considered a risky position to be in.

Liquidity, on the other hand, is essential for fund managers to take advantage of market opportunities. There must be a strategy in place to cover the company's short-term obligations in the event of an unexpected event, such as the death of a beneficiary who leaves behind dependants. If funds are to be efficient, they need to avoid hanging on to unused money, which is regarded a waste of resources in modern cash management, according to Hall (2000).

2.3.3 Fund Size

A large scheme is more flexible in terms of investments since it has the ability to make calculated betas during investment, and accommodate more risks compared to smaller ones, hence they can benefit from a high-risk high returns (Kusa & Ongore,

2013). The size of pension funds significantly determines its performance and is given by its contributions, active membership, schemes, and assets (Kigen, 2016).

The RBA categorizes programs based on their asset worth for levy payments (Njoroge, 2014). Michira (2013) claimed that size matters when choosing a retirement plan. The conclusion was that larger schemes perform better than smaller ones owing to economies of scale. This contrasts Bauer (2010) who noted that size of fund has a negative impact on performance.

2.4 Empirical Review

Locally and globally researches have established the link between portfolio diversification and financial performance, the objectives, methodology and findings of these studies are discussed.

2.4.1 Global Studies

Czech investment funds were studied by Hlavac (2016) in an effort to determine the investing techniques used by these funds and how they impact their financial performance. All 76 investment funds in the Czech Republic were included in the analysis. Personal interviews were conducted with 10 investment managers using an interview guide. For the year 2012, secondary data was collected from the annual reports of several investment funds. Descriptive statistics were utilized to categorize them into either an active or a passive investing approach, respectively. The association between ROA and several aspects of investing strategy, including leverage, liquidity, and age and size, was shown to be positive. The findings of a chi square test reveal that organizations with strong liquidity perform better than those that lack or have less liquidity. In contrast to pension plans, the research concentrated on investment funds in Czech.

An examination of how market volatility, risk management regulations, and robust governance impact the financial returns of registered individual retirement plans in Ghana was conducted by Abels and Guven (2016), according to their work on the topic. They conducted a descriptive survey as part of their investigation. As a starting point, a random sample of 30 distinct pension plans was selected. As a result, the research relied on the census because of the tiny population. The investigation used data from both primary and secondary sources. According to the findings, the financial returns of individual pension plans were strongly influenced by excellent governance. Policy and regulatory foundations for Ghanaian individual pension plans should be improved. The study did not take into account portfolio mix and therefore a conceptual gap.

Sabugo (2017) examined the characteristics that determine the rise of investment income in Tanzania's social security systems. Studying variables that affect Tanzanian social security investment income growth was a primary goal of the study. The research employed a variety of methods, such as secondary aggregate data gathered from 2005/06 to 2016/17. The data collected during the review of documents was subjected to regression analysis in order to be evaluated. According to the findings of this study, the increase in investment income in social security schemes is impacted positively by members' contributions, benefits payments, and the value of social security schemes themselves. According to the findings of the research, social security schemes should broaden their coverage to include the informal sector by increasing member registration, improving benefit packages, and reinvesting members' contributions in more productive ventures in order to boost investment income growth and increase the amount of money saved. Financial performance and investment income growth are different and therefore a conceptual gap.

According to a study published by Boon, Briere, and Rigot (2017), regulatory variables and features of pension schemes in the United States, Canada, and the Netherlands have an impact on the distribution of hazardous assets. 600 pension plans from 1992 to 2011 were selected for the research. All of the hazardous assets were classified into three categories: stocks, risky fixed-income, and alternatives. As a proportion of total pension fund assets, each hazardous asset category was assessed. Investment in hazardous assets was impacted by the size and liquidity of pension plans, according to this research. There were two factors that had a higher impact on asset allocation than pension plan size and liquidity: the mark-to-market requirement and risk-based capital requirements. The social and economic setting of developed economies is diverse from Kenya where the current study will be conducted.

Studying the financial development of occupational retirement benefits in Australia, Mercer (2018) conducted a research project. An ordinary least squares method was used using 102 benefit schemes as the study's sample. According to the findings, investment strategy, member contributions, and the regulatory environment all had a significant role in the financial expansion of Australian workplace retirement plans. It has been shown that the three criteria have a positive and significant relationship with the financial development of occupational retirement funds. According to the data, the investing approaches used by pension funds have the potential to increase financial efficiency while also generating large returns. According to the conclusions of the research, members' contributions also had a significant impact on the financial growth of retirement benefits. Assets and pensioner payments, according to the results, should be invested more successfully in order to boost returns for retirees. This study was conducted among retirement schemes in Australia whose social economic

environment is different from that of pension funds in Kenya, which are the focus of the current study.

2.4.2 Local Studies

Ichingwa and Mbithi (2017) conducted an investigation of the impact of total contributions on the performance of Kenyan pension plans. The 261 registered occupational retirement benefits plans were sampled using a random sampling approach. Statistical methods were employed to examine secondary data, including inferential and descriptive statistics. The research found that overall contributions had a favorable and substantial impact on pension schemes' financial performance. In order to improve financial performance, the researchers proposed that Kenyan pension plans enhance their investments in systems that attract new members and so raise overall contributions. The study focused on only one variable and therefore other determinants such as portfolio diversification were not taken into account.

Pension plan financial performance was the subject of Were, Iravo, and Wanjala's (2017) research. Financial performance was the dependent variable, whereas liquidity, business size, retained profits, and leverage were the independent factors. By the end of 2016, the Retirement Benefits Authority has registered 818 occupational pension schemes in Kenya. A random selection procedure was used to choose 261 pension plans as a representative sample since the population was so diverse. Measures of productivity, liquidity, profitability, and the performance of fixed assets were all analyzed using financial ratios. Liquidity was shown to have a beneficial impact on financial performance, although it was not statistically significant. A one-year research period was used in the study, which may not have been long enough to draw conclusions.

Kenyan registered occupational pension schemes were studied by Namusonge, Sakwa, and Gathogo (2017) for their asset mix and financial performance. According to the study, the asset mix of occupational pension plans has a considerable influence on the financial viability of these plans. It has been shown that the independent variable (Asset mix) is responsible for 66.1% of variation in the financial performance of pension plans. A significant addition was made to the study of asset mix and financial performance in Kenyan pension schemes by this research. The study reveals a conceptual gap as it analyzed the various assets separately without taking into account the level of diversification.

Osewe (2020) ought to examine the effect of portfolio diversification on financial performance of investment firms listed at the NSE, Kenya. The study adopted descriptive research design. The target population included all 5 listed investment firms as at 31st December 2019. The study extracted annual secondary data from audited financial statements and other published data of the concerned listed investment firms. The data was collected for ten years beginning 2010 to 2019. Regression results showed that investment portfolio diversification, firm size and liquidity had a significant effect on financial performance of financial performance among investment firms listed at the NSE Kenya. This study focused on listed investment firms, while the current research is centered on Kenyan pension funds.

Keli (2021) attempted to ascertain how the performance of pension funds in Kenya is impacted by real estate investments. Descriptive research design was used. The target population was the 1340 pension funds in Kenya. The sample size was 134 pension funds which represented 10% of the entire population. Regression and correlation analysis were used to test the study hypotheses by establishing the relationship

between real estate investments and performance. The study found that real estate investments, fixed income investments and listed equity had a positive and significant effect on the performance among pension funds in Kenya. The research presents a conceptual gap as portfolio diversification was not considered.

2.5 Summary of the Literature Review

Various models have been proposed to characterize the theoretical relationship between the portfolio diversification and financial performance. MPT, APT, and CAPM are among the theories discussed. This segment too covers the primary factors of financial performance. On portfolio diversification and financial performance, both local and foreign researches have been conducted. In this segment, the results linked to them have been described. The fact that prior researchers had reached a minimum level of agreement was justification enough to pursue further investigation. The current study leveraged on this gap.

Differences in the operationalization of portfolio diversification revealed conceptual gaps. The absence of consensus in accepted research methods revealed methodological inadequacies from the empirical investigations research. Differences in research contexts revealed contextual gaps discovered during the review of empirical investigations. The majority of empirical studies on the topic were conducted in developed nations, and those conducted in the local context failed to focus on pension funds. These gaps have revealed that there are still some unclear areas in this area. The goal of the study is to make a contribution in this area.

2.6 Conceptual Framework

Displayed in figure 2.1 is the anticipated link between the variables. The predictor variable was portfolio diversification given by Herfindahl-Hirschman Index.

Theoretically, a more diversified portfolio is likely to outperform a less diversified portfolio due to diversification of risk. The control variables were fund liquidity and fund size. A more liquid fund is likely to meet obligation when they mature but it also comes with the opportunity costs of foregone investments. Large funds enjoy the economies of scale but there is also risk of inefficiencies. The response variable was financial performance given by the risk-adjusted return on investment.

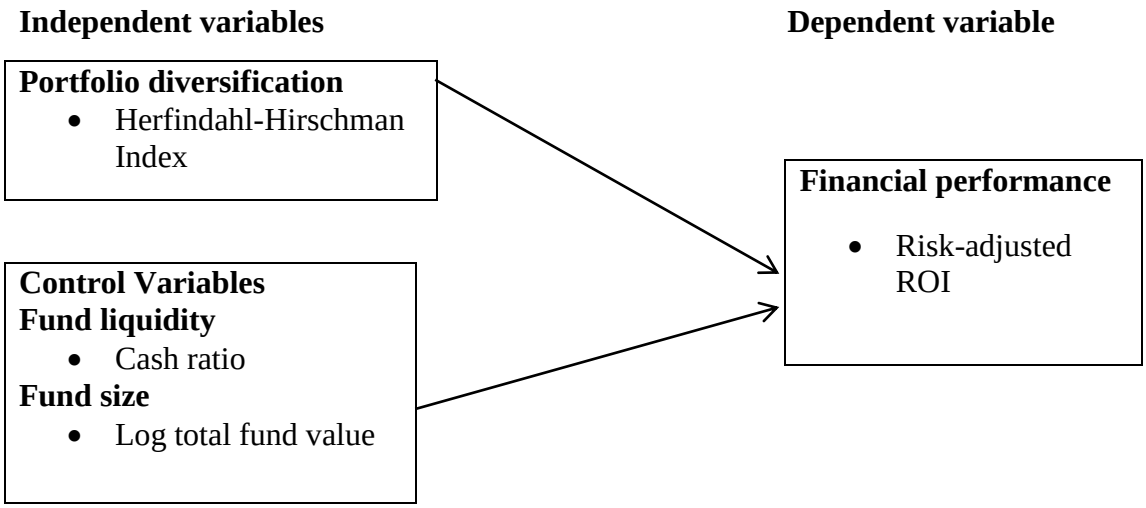

Figure 2.1: Conceptual Model

Source: Researcher (2022)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the approaches utilized in accomplishing the study objective which was to establish how portfolio diversification affects financial performance among pension funds in Kenya. The research emphasizes the design, data collection, as well as analysis specifically.

3.2 Research Design

A research design is a strategy that is utilized when conducting research in order to establish an acceptable standard that has been effectively validated and performed for a long period of time and is regarded significant by various researchers in the field (Cooper & Schindler, 2014). This study employed a descriptive research design where the study's variables were described in terms of their characteristics.

3.3 Population

A population is all observations from a collection of interest like events specified in an investigation (Burns & Burns, 2008). The Retirement Benefits Authority's 1340 registered pension funds as at 31st December 2021 made up the study's population.

3.4 Sampling Technique and Sample Size

Khan (2008) defined sampling technique as a procedure that comprises picking a sample of objects to represent all cases under consideration as part of the investigation. It outlines the surveyor's overall target population from which to pick the sample to study. This study adopted simple random sampling technique.

The study adopted Yamane (1967) formula with assumption of 90% of confidence level to estimate the sample size.

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = sample size

N = population size

e = the level of precision

1 = Constant

$$n = 1340/\ 1+ 1340(0.1)^2$$

$$= 93.05 \approx 93 \text{ pension funds}$$

The sample size for the present research was 93 pension funds arriving at using simple random sampling.

3.5 Data Collection

Data was acquired exclusively from secondary sources. Data from secondary sources was collected in a data collecting sheet and was obtained from a range of publications from RBA and the sampled pension funds for the period between January 2017 and December 2021. Among the specific statistics collected were the values of real estate investments, fixed income investments, listed shares, cash ratio and fund size. RBA was chosen as the main source of data since it is the regulator of pension funds in Kenya and those funds are mandated by law to file financial reports with the regulator.

3.6 Data Analysis

The act of packing the acquired information, placing it in order, and organizing its primary components in such a way that the findings may be easily and effectively communicated, according to Cooper and Schindler (2014). The researcher used

STATA software version 16 for data analysis and presentation. Using descriptive statistics, the study summarized the variables of the study. The data was then statistically displayed in tables using percentages, frequencies, central tendency measurements, and dispersion. A panel regression model was used to establish the effect of portfolio diversification on pension funds' ROI.

3.6.1 Diagnostic Tests

The diagnostic tests performed are outlined in Table 3.1

Table 3.1: Diagnostic Tests

Assumption	Description	Test	Interpretation	Treatment
Normality	To verify normal distribution, the test is conducted	Shapiro–Wilk test	If p values are above 0.05, the variables are normally distributed	application of square roots or logs to non-normality
Multicollinearity	The phenomenon known as multicollinearity occurs when there is a connection between many variables, which then leads to the standard errors distorting the regression analysis.	VIF Test	Multicollinearity exist where the VIF > 10	Eliminate highly correlated variables.
Heteroscedasticity	to determine whether the model's or the errors' variance is different for each observation	Breusch–Pagan test	Heteroscedasticity exist where the p-value $p<0.05$)	Use Natural log of variables
Autocorrelation	To determine the value of a single variable by considering other variables that are connected to it.	Breusch-Godfrey test.	If p-values are lower than 0.05, autocorrelation is present.	Hildreth-Lu Procedure

Stationarity test	In order to evaluate whether or not a time series variable has a unit root and whether or not it is stationary	ADF test	If p values are below 0.05, unit roots exist.	Use Natural log of variables
Hausman specification test	To differentiate between fixed-effects and random-effects models and identify the optimal one	Hausman test	Use fixed effects model if p value is less than 0.05 and random effects if otherwise	Use natural log of variables

3.6.2 Analytical Model

The following equation was applicable:

$$Y= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where: Y = Financial performance measured by risk-adjusted ROI as per the Sharpe Ratio

$$\text{Risk-adjusted ROI} = \frac{\text{ROI} - \text{Risk Free Interest Rate}}{\text{Portfolio Standard Deviation}}$$

$$\text{ROI} = \frac{(\text{Current Fund Value} - \text{Previous Fund Value})}{\text{Previous Fund Value}} * 100$$

β_0 =y intercept of the regression equation.

β_1, β_2, β_3 =are the regression coefficients

X_1 = Portfolio diversification as measured by the Herfindahl Hirschman Index computed as the sum squared shares of the individual investment components to total assets subtracted from unity to get a value that increases with the degree of diversification

HHI= 1- (asset 1/total assets)^2+ (asset 2/total assets)^2+ (asset3/total assets)^2

X_2 = Fund liquidity as measured by cash ratio

X_3 = Fund size as measured by natural logarithm of total fund value

ε =error term

3.6.3 Tests of Significance

The relevance of the overall model as well as the variable was determined via the use of parametric tests. To determine whether the model was significant, the study used the F-test and the analysis of variance (ANOVA), but to determine if any given variable is statistically significant, the study used the t-test.

CHAPTER FOUR: DATA ANALYSIS RESULTS AND FINDINGS

4.1 Introduction

This section presents descriptive statistics, outcomes and interpretations of various tests namely; test of normality, Multicollinearity, heteroskedasticity tests, autocorrelation and stationarity test. The chapter also presents the results of Pearson correlation and regression analysis.

4.2 Descriptive Statistics

This part presents the descriptive findings from the collected figures. The descriptive results include mean and standard deviation for each of the research parameters. The analyzed figures were gotten from the RBA reports and individual pension funds annual reports for 5 years (2017 to 2021). The number of observations is 430 (86*5) as 86 pension funds provided complete data for the 5 year period. The outcomes are as shown in Table 4.1

Table 4.1: Descriptive Results

	N	Minimum	Maximum	Mean	Std. Deviation
ROI	430	.0015	.3650	.112517	.0865121
Portfolio diversification	430	.5714	1.0000	.886619	.0789238
Fund liquidity	430	.0074	3.2957	1.095325	.5501079
Fund size	430	6.0724	8.7303	7.772521	.5754284
Valid N (listwise)	430				

Source: Research Findings (2022)

4.3 Diagnostic Tests

Diagnostic tests done by the researcher to ensure the assumptions of Classic Linear Regression Model (CLRM) are not violated and to obtain suitable models for examining in the consequence that the CLRM hypotheses are infringed.

Consequently, the pre and post approximation analysis were carried out before processing regression model. This tests were namely; normality, Multicollinearity, heteroskedasticity, autocorrelation and stationarity. The study refrained from factitious regression results by getting this analysis.

4.3.1 Normality Test

The normality of data can be tested using various methods. The following methods are often used include the Shapiro–Wilk test and Kolmogorov–Smirnov test. The Shapiro–Wilk test is best for small sample sizes (n <50 samples), while it can also be used on more extensive samples selections, whereas the Kolmogorov–Smirnov test is best for n>50 samples. As a result, the study used the Kolmogorov–Smirnov test as the numerical method of determining normality. Null hypothesis for these tests states that the data was obtained from a normally distributed population. The hypothesis is rejected when P-value is less than 0.05, and the figures are said to be not normally distributed.

Table 4.2: Test for Normality

	Kolmogorov-Smirnov	**P-value**
ROI	.918	.822
Portfolio diversification	.881	.723
Fund liquidity	.874	.812
Fund size	.892	.784

Source: Research Findings (2022)

From Table 4.2 results, all the study variables have a p value more than 0.05 and therefore were normally distributed.

4.3.2 Multicollinearity Test

Multicollinearity occurs when the independent variables in a regression model are significantly linked. Multicollinearity was assessed using the VIF and tolerance

indices. When the VIF value is higher than ten and the tolerance score is less than 0.2, multicollinearity is present, and the assumption is broken. The VIF values are less than 10, indicating no problem with multicollinearity.

Table 4.3: Multicollinearity

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Portfolio diversification	0.568	1.761
Fund liquidity	0.349	2.865
Fund size	0.618	1.618

Source: Research Findings (2022)

4.3.3 Heteroskedasticity Test

The residual variance from the model must be constant and unrelated to the independent variable in linear regression models calculated using the Ordinary Least Squares (OLS) method(s). Homoskedasticity refers to constant variance, whereas heteroscedasticity refers to non-constant variance. The study used the Breusch-Pagan/Cook-Weisberg test to determine if the variation was heteroskedastic. The hypothesis implies constant variance, indicating that the data is homoscedastic. The outcomes are as shown in the table below.

Table 4.4: Heteroskedasticity Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity		
chi2(430)	=	317.44
Prob > chi2	=	0.1411

Source: Research Findings (2022)

Table above reveals that the hypothesis was accepted since the p-value was 0.1411, which was greater than 0.05. As a result, the dataset had homoskedastic variances. Since the P-values of Breusch-Pagan's test for homogeneity of variances were more

than 0.05. The test therefore confirmed homogeneity of variance. The data can therefore be used to conduct panel regression analysis.

4.3.4 Autocorrelation Test

Serial correlation, also known as autocorrelation, makes the standard errors of coefficients appear to be less than in linear panel data models, resulting in higher R-squared and erroneous hypothesis testing Autocorrelation was verified via Durbin-Watson test. If the Durbin-Watson test results in a value close to 2, the error terms of regression variables are uncorrelated (i.e. between 1 and 3). The figure will be better if it is nearer to 2. The outcomes are presented in the table below.

Table 4.5: Test of Autocorrelation

Durbin Watson Statistic
2.183

Source: Research Findings (2022)

The Durbin-Watson value was 2.183, according to the findings in Table 4.5. The fact that the Durbin-Watson statistic was near to 2 demonstrates that the error terms of regression variables are uncorrelated.

4.3.5 Stationarity Test

The research variables were subjected to a group data unit-root test to establish if the data was stationary. This test was Levin-Lin Chu unit root test. At a standard statistical significance level of 5%, the test was compared to their corresponding p-values. The null hypothesis for this test states that every group has a unit root while the alternative hypothesis states that at least one panel are stationary. The table below shows Levin-Lin Chu unit root test outcomes.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test			
Variable	**Statistic**	**p value**	**Comment**
ROI	7.3284	0.0000	Stationary
Portfolio diversification	7.1163	0.0000	Stationary
Fund liquidity	8.0027	0.0000	Stationary
Fund size	6.9548	0.0000	Stationary

Source: Research Findings (2022)

As demonstrated by the above table this test concludes that the figures are stationary at a statistical significance level of 5% as the p-values all fall below 0.05.

4.3.6 Hausman Test

When using panel data, it is necessary to establish if a fixed or random effect model is more desirable. For the purpose of choosing the best panel regression model, the Hausman specification test was used. In essence, a Hausman specification test determines if the unique errors have a relationship to the regressors, with the null hypothesis being that they do not (random effect is preferred). Fixed effects were utilized when the P-value was significant (below 0.05), while random effects were used otherwise. The outcomes of the Hausman test are shown in the table below.

Table 4.7: Hausman Test Results

chi2(3)	P-Value
0.13	0.6418

Null Hypothesis: The appropriate model is Random Effects

Source: Research Findings (2022)

4.4 Correlation Results

To determine the degree and path of link of each predictor variable and the response variable, correlation analysis was carried out. The correlation findings in Table 4.8

show the degree of association among the research variables in terms of strength and direction.

Table 4.8: Correlation Results

		ROI	Portfolio diversification	Fund liquidity	Fund size
ROI	Pearson Correlation	1			
	Sig. (2-tailed)				
Portfolio diversification	Pearson Correlation	.303**	1		
	Sig. (2-tailed)	.000			
Fund liquidity	Pearson Correlation	.288*	.061	1	
	Sig. (2-tailed)	.000	.208		
Fund size	Pearson Correlation	.254**	.014	.020	1
	Sig. (2-tailed)	.000	.765	.684	
a. Listwise N=430					

Source: Research Findings (2022)

The correlation outcomes disclose that portfolio diversification has a weak positive as well as significant link with performance of pension funds in Kenya (value of r is 0.303) at 5 percent significance level. Fund liquidity has a weak positive as well as significant link with performance of pension funds in Kenya (value of r is 0.288) at 5 percent significance level. The outcomes further disclose that fund size and performance of pension funds in Kenya have a positive as well as significant correlation (value of r is =0.254) at 5 % significance level.

4.5 Regression Results

To know the degree to which performance is described by the chosen variables, regression analysis was used. In the table below the regression's findings were displayed. Through the conclusions as epitomized by the R^2, the studied independent

variables explained variations of 0.4739 in performance among pension funds in Kenya. This suggests that other factors account for 52.61% of the variability in performance among pension funds in Kenya, while the three variables account for 47.39% of those variations. The significance level of the data was 0.000, according to Table 4.9's ANOVA results, which proposes that the model is a fit choice for drawing conclusions about the variables.

Table 4.9: Regression Results

ROI	Coef.	Std. Err.	P>t
Portfolio diversification	0.095	0.025	0.000
Fund liquidity	0.082	0.025	0.001
Fund size	0.033	0.012	0.008
_cons	-0.277	0.126	-0.028
Model Summary			
R-squared	0.4739		
Wald chi2(3)	41.18		
Prob > chi2	0.0000		

* p<0.05

Source: Research Findings (2022)

The coefficient of regression model was as below;

$$\mathbf{Y = -0.277 + 0.095X_1 + 0.082X_2 + 0.033X_3}$$

Where:

Y = ROI X_1 = Portfolio diversification; X_2= Fund liquidity; X_2= Fund size

4.6 Discussion of Research Findings

This research aimed to demonstrate how portfolio diversification affects performance among pension funds in Kenya. The research used a descriptive plan while the 1340 pension funds in Kenya were the population. The sample size was 93 arrive at using Yamane formula. Data was collected from 86 pension funds which was considered

adequate for the study. The research depended on secondary data which was gotten from RBA and individual pension funds annual reports. Portfolio diversification was measured using HHI index. The control variables were fund liquidity and fund size. Descriptive and inferential statistics were used in the analysis of data. The outcomes are elaborated in this part.

The correlation outcomes disclose that portfolio diversification has a weak positive as well as significant link with performance of pension funds in Kenya (value of r is 0.303) at 5 percent significance level. Fund liquidity has a weak positive as well as significant link with performance of pension funds in Kenya (value of r is 0.288) at 5 percent significance level. The outcomes further disclose that fund size and performance of pension funds in Kenya have a positive as well as significant correlation (value of r is =0.254) at 5 % significance level.

Multivariate regression outcomes revealed that the R-squared was 0.4739 suggesting that 47.39% of changes in performance of pension funds in Kenya are due to the three variables selected for this study. This means that variables not considered explain 52.61% of changes in performance of pension funds in Kenya. The overall model was statistically significant and had a p value of 0.000 that is below the 0.05 significance level. This suggests that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, portfolio diversification had a positive and substantial effect on financial performance of pension funds in Kenya as shown by (β value is 0.095, p value is 0.000). Fund size also unveiled a positive and statistically significant influence on performance of pension funds in Kenya (β value is 0.082, p value is 0.001). Further, fund size

displayed a positive and significant influence on performance of pension funds in Kenya as shown by (β value is 0.033, p value is 0.008).

These outcomes agree with Osewe (2020) who sought to examine the effect of portfolio diversification on financial performance of investment firms listed at the NSE, Kenya. The study adopted descriptive research design. The target population included all 5 listed investment firms as at 31st December 2019. The study extracted annual secondary data from audited financial statements and other published data of the concerned listed investment firms. The data was collected for ten years beginning 2010 to 2019. Regression results showed that investment portfolio diversification, firm size and liquidity had a significant effect on financial performance of financial performance among investment firms listed at the NSE Kenya.

The results also concur with Keli (2021) who attempted to ascertain how the performance of pension funds in Kenya is impacted by real estate investments. Descriptive research design was used. The target population was the 1340 pension funds in Kenya. The sample size was 134 pension funds which represented 10% of the entire population. Regression and correlation analysis were used to test the study hypotheses by establishing the relationship between real estate investments and performance. The study found that real estate investments, fixed income investments and listed equity had a positive and significant effect on the performance among pension funds in Kenya.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter includes a summary of statistical findings, conclusions drawn from these data, study contributions, and policy recommendations for each research hypothesis. The chapter also discusses the study's limitations and potential research prospects.

5.2 Summary of Findings

This research aimed to demonstrate how portfolio diversification affects performance among pension funds in Kenya. The research used a descriptive plan while the 1340 pension funds in Kenya were the population. The sample size was 93 arrive at using Yamane formula. Data was collected from 86 pension funds which were considered adequate for the study. The research depended on secondary data which was gotten from RBA and individual pension funds annual reports. Portfolio diversification was measured using HHI index. The control variables were fund liquidity and fund size. Descriptive and inferential statistics were used in the analysis of data. The outcomes are elaborated in this part.

The correlation outcomes disclose that portfolio diversification has a weak positive as well as significant link with performance of pension funds in Kenya at 5 percent significance level. Fund liquidity has a weak positive as well as significant link with performance of pension funds in Kenya at 5 percent significance level. The outcomes further disclose that fund size and performance of pension funds in Kenya have a positive as well as significant correlation at 5 % significance level.

Multivariate regression outcomes revealed that the R-squared was 0.4739 suggesting that 47.39% of changes in performance of pension funds in Kenya are due to the three

variables selected for this study. This means that variables not considered explain 52.61% of changes in performance of pension funds in Kenya. The overall model was statistically significant and had a p value of 0.000 that is below the 0.05 significance level. This suggests that the overall model had the required goodness of fit.

The multivariate regression analysis further revealed that individually, portfolio diversification had a positive and substantial effect on financial performance of pension funds in Kenya as shown by (β value is 0.095, p value is 0.000). Fund size also unveiled a positive and statistically significant influence on performance of pension funds in Kenya (β value is 0.082, p value is 0.001). Further, fund size displayed a positive and significant influence on performance of pension funds in Kenya as shown by (β value is 0.033, p value is 0.008).

5.3 Conclusions

The goal of the research was to find out portfolio diversification related to performance among pension funds in Kenya. The study results revealed that portfolio diversification had a positive as well as significant correlation with performance, which might mean that pension funds with higher portfolio diversification are more likely to post better performance. This is explainable by the fact that higher portfolio diversification implies effective risk management leading to return maximization.

The study results indicated that liquidity had a positive and significant relationship with ROI of pension funds, which might mean that pension funds with higher liquidity are more likely to post better ROI. This can be explained by the fact that higher liquidity implies ability to take advantage of short term investment opportunities as they arise and also ability to pay recurrent obligations as they fall due and this might translate to pension fund financial performance enhancement.

The study results showed that fund size had a positive and significant effect on financial performance of pension funds. This may mean that bigger pension funds in terms of fund size are likely to post better results compared to smaller pension funds. This can be explained by the fact that pension funds with more funds are likely to enjoy the benefits of economies of scale and they are likely to negotiate better investment terms leading to a rise in ROI.

5.4 Recommendations for Policy and Practice

The study finding reveals that portfolio diversification contributes to an increase in ROI of pension funds. The study therefore recommends that policy makers among the pension funds in Kenya should come up with policies that enhance diversification into the various asset classes available as this will lead to an increase in financial performance of pension funds. Pension funds board members should also advocate for an increase in portfolio diversification to enhance the return on investment.

Further, fund liquidity was found to have a positive relationship with ROI of pension funds. The study therefore recommends that pension funds in Kenya should strive to have a higher liquidity as this will help them in meeting maturing obligations as they arise as well help them in taking advantage of short term investment opportunities that might be available.

From the study findings, fund size had a significant positive effect on ROI of pension funds. Therefore, the study recommends that heads of pension funds should develop strategies aimed at increasing fund size. This can be done by coming up with effective marketing strategies that will bring more members on boards. Members' contributions can also be increased and this will also contribute to an increase in the fund size.

5.5 Limitations of the Study

This study was only conducted for five years between 2017 and 2021 due to time and cost constraints. There is no surety for the study findings to hold beyond the period studied. Furthermore, it is uncertain whether the findings would hold beyond 2021. Also because of constraints in time and finance, the research was only done on pension funds; there is no surety for the study findings to hold if other firms were examined.

The focus was on various factors which are thought to influence performance among Kenyan pension funds. The study specifically examined three explanatory factors. Though, in certainty, there is presence of other variables probable to influence performance among Kenyan pension funds including internal like corporate governance mechanisms whereas others are beyond the control of the firm like inflationary pressures as well as political stability.

The data quality was the main restriction for this research. It is impossible to conclusively conclude that the study's findings accurately reflect the current reality. It was presumed that figures utilized in the research are accurate. Due to the current conditions, there has also been a great deal of incoherence in the data measurement. The research used secondary data rather than primary data. Due to the limited availability of data, only some of the performance drivers have been considered.

The data analysis was performed using regression models. Due to restrictions associated with using the model, like inaccurate findings resultant from changes from the varying value, the researchers are not be able to generalize the conclusions precisely. A regression model cannot be performed using the prior model after data is added to it.

5.6 Suggestions for Further Research

This research concentrated on pension funds in Kenya. Further studies can focus on a wide scope by covering other firms in Kenya such as investment firms and unit trusts to agree or differ with the results of the current research. Further, this research focused on only three determinants of pension funds' performance. Future studies should focus on other performance determinants that were not considered in this study.

The current research scope was restricted to five years; more research can be done past five years to determine whether the results might persist. Thus, inherent future studies may use a wider time span that can either support or criticize the current research conclusions. The scope of the study was additionally constrained in terms of context where Kenyan pension funds were examined. Further studies can be extended to other firms to establish if they complement or contradict the current study findings. Researchers in the East African region, the rest of Africa, and other global jurisdictions can too perform the research in these establishments to make sure the current research conclusions will persist.

The research only used secondary data; alternate research may use primary data sources such in-depth questionnaires and structured interviews given to practitioners and stakeholders. These can then affirm or criticize the results of the current research. The research used multiple linear regression and correlation study; future research could use other analytic techniques such factor analysis, cluster analysis, granger causality, discriminant analysis, and descriptive statistics, among others.

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APPENDICES

Appendix I: Research Data

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
County Pension Fund	2017	0.0826	0.9000	0.7526	8.2162
	2018	0.1139	0.9090	0.7788	8.2177
	2019	0.1465	0.9091	0.9003	8.2509
	2020	0.1945	0.8571	1.2190	8.2695
	2021	0.1736	0.9090	0.7812	8.3168
ICEALION Guaranteed Umbrella Fund	2017	0.2410	0.9380	1.5348	8.3379
	2018	0.1590	0.9167	1.2537	8.4239
	2019	0.0644	0.9000	1.8550	8.4141
	2020	0.0604	0.9091	1.6321	8.4557
	2021	0.0310	0.8750	3.2957	8.4859
Kivuli Umbrella Fund	2017	0.0279	0.8750	0.6206	8.2067
	2018	0.0248	0.8571	0.6118	8.2879
	2019	0.0139	0.9090	1.1138	8.3768
	2020	0.0019	0.9091	1.0363	8.4253
	2021	0.1050	0.8750	1.5372	8.4516
KPA DB Scheme	2017	0.0840	1.0000	1.4935	7.5576
	2018	0.1331	0.9090	1.1013	7.6198
	2019	0.1709	0.8889	0.7508	7.5878
	2020	0.0574	1.0000	0.8794	7.5652
	2021	0.1230	0.9333	1.1345	7.5406
Sanlam Umbrella Retirement Fund	2017	0.0887	0.8889	0.5897	8.0577
	2018	0.0937	0.9167	0.6198	8.1238
	2019	0.0986	1.0000	0.5994	8.1659
	2020	0.0999	1.0000	0.7079	8.2286

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2021	0.1514	0.8889	0.5240	8.3287
Suluhu Umbrella Scheme	2017	0.0609	0.8750	1.8238	8.5767
	2018	0.2966	1.0000	1.5769	8.6278
	2019	0.2323	0.8571	1.1119	8.6514
	2020	0.2298	0.8750	1.2749	8.6986
Takaful Umbrella Fund	2021	0.1657	0.9170	1.3443	8.7303
	2017	0.0105	0.8750	0.9830	8.0019
	2018	0.0572	0.9167	1.0618	8.0506
	2019	0.0125	1.0000	1.7404	8.0485
	2020	0.0912	0.9091	1.2006	8.1428
	2021	0.0185	0.9091	0.9407	8.1599
The Jubilee Insurance Umbrella Scheme	2017	0.1863	0.8750	1.3215	7.9815
	2018	0.0950	0.9090	0.7600	8.0263
	2019	0.1526	0.8750	0.6879	8.0767
	2020	0.1072	0.8750	0.9920	8.1894
	2021	0.0096	0.8333	1.0697	8.2824
Teleposta DC	2017	0.0175	0.8570	0.2677	8.0201
	2018	0.0041	0.8889	0.3491	8.0438
	2019	0.1415	0.8889	0.3323	7.9725
	2020	0.1548	0.9167	0.2661	7.9744
	2021	0.1681	0.9333	0.3119	7.9950
The Monarch Umbrella Retirement Fund	2017	0.0296	0.8750	1.1178	8.1877
	2018	0.0382	1.0000	1.1099	8.2356
	2019	0.0419	1.0000	0.9898	8.2709
	2020	0.0275	0.9170	0.8495	8.3291
	2021	0.0570	0.9231	1.0610	8.3508
Prudential Umbrella Retirement Benefits Scheme	2017	0.0402	0.8750	0.8533	8.3898
	2018	0.0415	0.9090	0.9362	8.4802
	2019	0.2296	0.9090	0.1414	8.5279
	2020	0.2144	0.8750	0.1037	8.5719
	2021	0.1606	1.0000	1.1535	8.6261
UAP Umbrella Retirement Benefits Scheme	2017	0.1440	0.8750	0.2616	7.2060
	2018	0.1219	0.8889	0.2229	7.1988
	2019	0.0957	0.8889	0.2479	7.2236
	2020	0.2794	0.9375	0.2867	7.3186
	2021	0.2788	0.9090	0.2803	7.3549

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
Alliance Hotels ltd	2017	0.1096	0.8890	0.8533	7.7230
	2018	0.0593	0.8889	0.9362	7.6766
	2019	0.2438	1.0000	1.1535	7.5374
	2020	0.1236	1.0000	0.5988	7.4993
	2021	0.1261	1.0000	0.8328	7.4789
Amana Personal Pension Plan	2017	0.1169	1.0000	0.9120	7.6874
	2018	0.0870	0.8889	1.0407	7.7237
	2019	0.0850	0.8889	0.6973	7.5611
	2020	0.0769	0.9091	1.0418	7.6254
	2021	0.0621	1.0000	0.9047	7.6188
NCBA Individual Pension Plan	2017	0.0665	1.0000	0.5927	8.2162
	2018	0.0515	0.8182	1.1535	8.2177
	2019	0.0227	0.8889	0.6937	8.2509
	2020	0.0227	0.9350	0.7149	8.2695
	2021	0.2837	0.5714	0.5761	8.3168
KPA DC	2017	0.0015	0.9090	1.1737	7.3921
	2018	0.0337	0.9230	0.9834	7.3912
	2019	0.1402	0.9230	1.3268	7.4269
	2020	0.0819	0.7143	1.1912	7.4953
	2021	0.3061	0.9375	1.2957	7.6089
Cytonn Personal Retirement Benefits Scheme	2017	0.1685	0.9412	2.6058	7.7088
	2018	0.2919	0.8750	1.9871	7.7925
	2019	0.2136	0.8889	1.7572	7.7958
	2020	0.0041	0.8570	1.5740	7.8087
	2021	0.0041	0.7140	1.5548	7.7387
Fahari Retirement Plan	2017	0.1179	0.5714	1.3073	8.1416
	2018	0.2618	0.8990	1.2215	8.2161
	2019	0.1030	0.9091	2.6804	8.2482
	2020	0.1341	0.9440	2.2625	8.2873
	2021	0.0918	0.8330	0.6313	8.2934
Ecobank Kenya ltd SRBS	2017	0.0045	0.9000	1.2513	7.0270
	2018	0.0527	1.0000	1.0568	6.9998
	2019	0.0538	0.9091	1.2442	6.9773
	2020	0.0737	0.9440	0.9423	6.9368
	2021	0.0201	0.5714	1.0481	6.9339
Gencap Individual Pension Plan	2017	0.0475	0.7143	1.0131	6.8581

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2018	0.0879	1.0000	1.1560	6.8614
	2019	0.1244	0.9167	1.5957	6.9607
	2020	0.0180	0.9167	1.3150	7.0390
	2021	0.0180	0.9090	1.0811	7.1179
Mafao Fund	2017	0.1605	0.9380	1.1535	8.3379
	2018	0.1071	0.9231	0.7844	8.4239
	2019	0.0045	0.9231	1.0194	8.4141
	2020	0.0225	0.9286	0.8533	8.4557
	2021	0.0400	0.8182	0.9362	8.4859
Haco Tiger Kenya ltd	2017	0.0397	0.9231	1.1157	8.3379
	2018	0.0421	0.5714	0.0074	8.4239
	2019	0.1185	0.7143	1.2995	6.7611
	2020	0.0468	0.8182	1.1102	6.7943
	2021	0.0662	0.9000	0.8008	8.2879
Pan Africa Life Personal Pension Plan	2017	0.1105	0.9290	0.9872	8.2067
	2018	0.0800	0.9380	0.7481	8.2879
	2019	0.0468	0.8182	0.7565	8.3768
	2020	0.0759	0.8182	0.7018	8.4253
	2021	0.2283	0.8182	0.6975	8.4516
Zamara Vuna Pension Plan	2017	0.2214	0.8750	0.6772	8.4859
	2018	0.3650	0.7273	0.9922	8.3379
	2019	0.0561	0.8889	0.8564	8.4239
	2020	0.0168	0.8889	0.3208	6.0724
	2021	0.1243	0.9000	1.1535	6.5049
Transnational Bank Staff Pension	2017	0.1145	0.8889	2.5763	7.5107
	2018	0.1364	0.8182	2.2844	7.5376
	2019	0.0400	0.9000	0.2538	7.5084
	2020	0.0199	1.0000	0.2260	7.6403
	2021	0.0111	0.7143	0.2058	7.6508
Zimele Personal Pension Plan	2017	0.2872	0.8750	0.8533	8.3898
	2018	0.0267	0.8571	0.9362	8.4802
	2019	0.0035	0.9380	0.7533	8.5279
	2020	0.1599	0.9167	2.0736	8.5719
	2021	0.1599	0.8180	0.8535	8.6261
Teleposta DB	2017	0.1966	0.8000	1.3268	7.6734
	2018	0.2632	0.8670	1.1912	7.7973
	2019	0.0323	0.8890	1.2957	7.6170

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2020	0.0706	0.8750	2.6058	7.6754
	2021	0.1038	0.8180	1.9871	7.6856
The Jubilee Insurance Umbrella Scheme	2017	0.1004	0.8890	1.7572	7.1251
	2018	0.0773	0.8182	1.1535	7.0917
	2019	0.0718	0.8571	1.1457	7.1023
	2020	0.0745	0.9167	1.3058	7.1695
	2021	0.0365	0.9380	1.5680	7.1649
Pioneer Umbrella Retirement Fund	2017	0.0635	1.0000	1.6418	7.4691
	2018	0.0277	1.0000	1.4860	7.4211
	2019	0.0882	0.8750	0.9118	7.4344
	2020	0.0327	0.8990	0.7956	7.4408
	2021	0.0327	0.7143	0.6188	7.4577
Ngao Umbrella Pension Scheme	2017	0.2284	0.9380	1.0494	7.1018
	2018	0.3270	0.9091	0.7956	7.0967
	2019	0.2227	0.8889	0.6495	7.0904
	2020	0.2210	0.9167	0.6850	7.1179
	2021	0.2283	0.9000	0.8274	7.1249
Octagon Umbrella Retirement Benefits Scheme	2017	0.2175	1.0000	0.6214	7.1984
	2018	0.2715	1.0000	1.2494	7.2791
	2019	0.2842	0.8890	0.9985	7.3376
	2020	0.2461	0.7143	1.4241	7.4162
	2021	0.2692	0.8990	1.5200	7.4263
Nampak Kenya	2017	0.3188	0.9167	0.5531	6.5049
	2018	0.3282	0.9333	0.7350	7.5107
	2019	0.3134	1.0000	0.5475	7.5376
	2020	0.0600	1.0000	0.8323	7.5084
	2021	0.0642	0.7500	1.2338	7.6403
Mwavuli Pension Fund	2017	0.0383	0.8990	0.8533	7.6508
	2018	0.0409	0.7140	0.9362	8.3898
	2019	0.1052	0.9167	0.7038	8.4802
	2020	0.1249	0.9167	1.5759	8.5279
	2021	0.1203	0.8333	1.5392	8.5719
Minet Kenya Umbrella Retirement Fund	2017	0.2358	0.9375	2.2120	8.6261
	2018	0.1874	0.8750	2.2265	7.6734
	2019	0.1596	0.8889	2.2665	7.7973
	2020	0.1253	0.9000	3.0110	7.6170

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2021	0.1372	0.8330	1.2633	7.6754
Kenya Orient Umbrella Pension Fund	2017	0.0661	0.8670	1.1535	7.6856
	2018	0.0758	0.8750	1.0683	7.1251
	2019	0.0722	0.9440	0.7225	7.0917
	2020	0.0795	0.7500	0.5202	7.1023
	2021	0.0795	1.0000	1.1515	7.1695
Maseno University	2017	0.0868	0.8889	0.9985	7.1649
	2018	0.0940	0.8333	0.8278	7.4691
	2019	0.0215	0.8889	0.8314	7.4211
	2020	0.0961	0.9090	0.6253	7.4344
	2021	0.0562	0.7140	0.9044	7.4408
Kenindia Umbrella Provident Fund	2017	0.0812	0.9000	0.6952	7.4577
	2018	0.0910	0.8667	0.7589	7.1018
	2019	0.0507	0.7500	1.1507	7.0967
	2020	0.0743	0.9091	0.4991	7.0904
	2021	0.0581	0.9000	0.6157	7.1179
ICEALION Umbrella Retirement Benefits Scheme	2017	0.0650	0.9091	0.9182	7.1249
	2018	0.0540	0.8889	1.3433	7.1984
	2019	0.0468	0.8000	1.6103	7.2791
	2020	0.0138	0.9000	1.8041	7.3376
	2021	0.0138	1.0000	1.6465	7.4162
Enwealth Umbrella Fund	2017	0.3482	0.9412	1.3569	7.4263
	2018	0.2536	0.9000	0.5875	8.2161
	2019	0.0833	0.8182	1.0541	8.2482
	2020	0.0851	0.9000	1.5925	8.2873
	2021	0.0991	0.8889	2.1825	8.2934
Fusion Umbrella Retirement Benefits Scheme	2017	0.2214	0.8333	1.6103	7.0270
	2018	0.3650	0.8330	1.8041	6.9998
	2019	0.0561	0.7500	0.8533	6.9773
	2020	0.0168	0.9444	0.9362	6.9368
	2021	0.1243	0.8990	1.1110	6.9339
Cytonn Umbrella Retirement Benefits Scheme	2017	0.0912	0.8000	1.4241	6.8581
	2018	0.1378	0.8889	1.5200	6.8614
	2019	0.1111	0.8000	0.5531	6.9607

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2020	0.0781	0.8000	0.7350	7.0390
	2021	0.0672	0.8990	0.5475	7.1179
CICAM Umbrella Retirement Fund	2017	0.0664	0.8890	0.8323	8.3379
	2018	0.0664	0.8000	1.2338	8.4239
	2019	0.0673	0.9091	0.8533	8.4141
	2020	0.0547	0.8330	0.9362	8.4557
	2021	0.0547	0.9091	0.7038	8.4859
CIC Umbrella Retirement Benefits Scheme	2017	0.0420	0.9091	1.5759	8.3379
	2018	0.2936	0.9091	1.5392	8.4239
	2019	0.1131	0.8889	2.2120	6.7611
	2020	0.1881	1.0000	2.2265	6.7943
	2021	0.2053	0.9333	2.2665	8.2879
Amana Umbrella Pension Scheme	2017	0.0826	0.9000	0.7526	8.2162
	2018	0.1139	0.9090	0.7788	8.2177
	2019	0.1465	0.9091	0.9003	8.2509
	2020	0.1945	0.8571	1.2190	8.2695
	2021	0.1736	0.9090	0.7812	8.3168
APA Life Umbrella Retirement Fund	2017	0.2410	0.9380	1.5348	8.3379
	2018	0.1590	0.9167	1.2537	8.4239
	2019	0.0644	0.9000	1.8550	8.4141
	2020	0.0604	0.9091	1.6321	8.4557
	2021	0.0310	0.8750	3.2957	8.4859
CFC Life Assurance Ltd Umbrella Fund	2017	0.0279	0.8750	0.6206	8.2067
	2018	0.0248	0.8571	0.6118	8.2879
	2019	0.0139	0.9090	1.1138	8.3768
	2020	0.0019	0.9091	1.0363	8.4253
	2021	0.1050	0.8750	1.5372	8.4516
Kenya Power DC	2017	0.0840	1.0000	1.4935	7.5576
	2018	0.1331	0.9090	1.1013	7.6198
	2019	0.1709	0.8889	0.7508	7.5878
	2020	0.0574	1.0000	0.8794	7.5652
	2021	0.1230	0.9333	1.1345	7.5406
Wakili Personal Retirement Benefits Scheme	2017	0.0887	0.8889	0.5897	8.0577
	2018	0.0937	0.9167	0.6198	8.1238

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2019	0.0986	1.0000	0.5994	8.1659
	2020	0.0999	1.0000	0.7079	8.2286
	2021	0.1514	0.8889	0.5240	8.3287
Stanlib Individual Pension Plan	2017	0.0609	0.8750	1.8238	8.5767
	2018	0.2966	1.0000	1.5769	8.6278
	2019	0.2323	0.8571	1.1119	8.6514
	2020	0.2298	0.8750	1.2749	8.6986
	2021	0.1657	0.9170	1.3443	8.7303
UAP Life Assurance Individual Retirement Benefits Plan	2017	0.0105	0.8750	0.9830	8.0019
	2018	0.0572	0.9167	1.0618	8.0506
	2019	0.0125	1.0000	1.7404	8.0485
	2020	0.0912	0.9091	1.2006	8.1428
	2021	0.0185	0.9091	0.9407	8.1599
Kenya Pipeline DB	2017	0.1863	0.8750	1.3215	7.9815
	2018	0.0950	0.9090	0.7600	8.0263
	2019	0.1526	0.8750	0.6879	8.0767
	2020	0.1072	0.8750	0.9920	8.1894
	2021	0.0096	0.8333	1.0697	8.2824
Prudential Individual Retirement Benefits Scheme	2017	0.0175	0.8570	0.2677	8.0201
	2018	0.0041	0.8889	0.3491	8.0438
	2019	0.1415	0.8889	0.3323	7.9725
	2020	0.1548	0.9167	0.2661	7.9744
	2021	0.1681	0.9333	0.3119	7.9950
Old Mutual Individual Retirement Benefits Scheme	2017	0.0296	0.8750	1.1178	8.1877
	2018	0.0382	1.0000	1.1099	8.2356
	2019	0.0419	1.0000	0.9898	8.2709
	2020	0.0275	0.9170	0.8495	8.3291
	2021	0.0570	0.9231	1.0610	8.3508
Octagon Personal Pension Scheme	2017	0.0402	0.8750	0.8533	8.3898
	2018	0.0415	0.9090	0.9362	8.4802
	2019	0.2296	0.9090	0.1414	8.5279
	2020	0.2144	0.8750	0.1037	8.5719
	2021	0.1606	1.0000	1.1535	8.6261
The Monarch Personal	2017	0.1440	0.8750	0.2616	7.2060

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
Pension Plan					
	2018	0.1219	0.8889	0.2229	7.1988
	2019	0.0957	0.8889	0.2479	7.2236
	2020	0.2794	0.9375	0.2867	7.3186
	2021	0.2788	0.9090	0.2803	7.3549
Kengen DC	2017	0.1096	0.8890	0.8533	7.7230
	2018	0.0593	0.8889	0.9362	7.6766
	2019	0.2438	1.0000	1.1535	7.5374
	2020	0.1236	1.0000	0.5988	7.4993
	2021	0.1261	1.0000	0.8328	7.4789
NTISL Personal Pension Plan	2017	0.1169	1.0000	0.9120	7.6874
	2018	0.0870	0.8889	1.0407	7.7237
	2019	0.0850	0.8889	0.6973	7.5611
	2020	0.0769	0.9091	1.0418	7.6254
	2021	0.0621	1.0000	0.9047	7.6188
Mwavuli Individual Pension Plan	2017	0.0665	1.0000	0.5927	8.2162
	2018	0.0515	0.8182	1.1535	8.2177
	2019	0.0227	0.8889	0.6937	8.2509
	2020	0.0227	0.9350	0.7149	8.2695
	2021	0.2837	0.5714	0.5761	8.3168
Kengen DB	2017	0.0015	0.9090	1.1737	7.3921
	2018	0.0337	0.9230	0.9834	7.3912
	2019	0.1402	0.9230	1.3268	7.4269
	2020	0.0819	0.7143	1.1912	7.4953
	2021	0.3061	0.9375	1.2957	7.6089
The Kenya Orient Individual Pension Plan	2017	0.1685	0.9412	2.6058	7.7088
	2018	0.2919	0.8750	1.9871	7.7925
	2019	0.2136	0.8889	1.7572	7.7958
	2020	0.0041	0.8570	1.5740	7.8087
	2021	0.0041	0.7140	1.5548	7.7387
Minet Individual Pension Plan	2017	0.1179	0.5714	1.3073	8.1416
	2018	0.2618	0.8990	1.2215	8.2161
	2019	0.1030	0.9091	2.6804	8.2482
	2020	0.1341	0.9440	2.2625	8.2873
	2021	0.0918	0.8330	0.6313	8.2934
Consolidated Provident Fund Scheme	2017	0.0045	0.9000	1.2513	7.0270
	2018	0.0527	1.0000	1.0568	6.9998

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2019	0.0538	0.9091	1.2442	6.9773
	2020	0.0737	0.9440	0.9423	6.9368
	2021	0.0201	0.5714	1.0481	6.9339
Mercantile Personal Provident Fund Scheme	2017	0.0475	0.7143	1.0131	6.8581
	2018	0.0879	1.0000	1.1560	6.8614
	2019	0.1244	0.9167	1.5957	6.9607
	2020	0.0180	0.9167	1.3150	7.0390
	2021	0.0180	0.9090	1.0811	7.1179
Madison Insurance Personal Pension Plan	2017	0.1605	0.9380	1.1535	8.3379
	2018	0.1071	0.9231	0.7844	8.4239
	2019	0.0045	0.9231	1.0194	8.4141
	2020	0.0225	0.9286	0.8533	8.4557
	2021	0.0400	0.8182	0.9362	8.4859
Kenindia Assurance Co. Ltd. Personal Pension Plan	2017	0.0397	0.9231	1.1157	8.3379
	2018	0.0421	0.5714	0.0074	8.4239
	2019	0.1185	0.7143	1.2995	6.7611
	2020	0.0468	0.8182	1.1102	6.7943
	2021	0.0662	0.9000	0.8008	8.2879
Jubilee Insurance Company Ltd Personal Pension Plan	2017	0.1105	0.9290	0.9872	8.2067
	2018	0.0800	0.9380	0.7481	8.2879
	2019	0.0468	0.8182	0.7565	8.3768
	2020	0.0759	0.8182	0.7018	8.4253
	2021	0.2283	0.8182	0.6975	8.4516
University of Nairobi	2017	0.2214	0.8750	0.6772	8.4859
	2018	0.3650	0.7273	0.9922	8.3379
	2019	0.0561	0.8889	0.8564	8.4239
	2020	0.0168	0.8889	0.3208	6.0724
	2021	0.1243	0.9000	1.1535	6.5049
GA Life Personal Pension Plan	2017	0.1145	0.8889	2.5763	7.5107
	2018	0.1364	0.8182	2.2844	7.5376
	2019	0.0400	0.9000	0.2538	7.5084
	2020	0.0199	1.0000	0.2260	7.6403
	2021	0.0111	0.7143	0.2058	7.6508
GA Life Personal Provident Plan	2017	0.2872	0.8750	0.8533	8.3898

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2018	0.0267	0.8571	0.9362	8.4802
	2019	0.0035	0.9380	0.7533	8.5279
	2020	0.1599	0.9167	2.0736	8.5719
	2021	0.1599	0.8180	0.8535	8.6261
Enwealth Personal Pension Scheme	2017	0.1966	0.8000	1.3268	7.6734
	2018	0.2632	0.8670	1.1912	7.7973
	2019	0.0323	0.8890	1.2957	7.6170
	2020	0.0706	0.8750	2.6058	7.6754
	2021	0.1038	0.8180	1.9871	7.6856
Union East Africa Pension Provident Fund	2017	0.1004	0.8890	1.7572	7.1251
	2018	0.0773	0.8182	1.1535	7.0917
	2019	0.0718	0.8571	1.1457	7.1023
	2020	0.0745	0.9167	1.3058	7.1695
	2021	0.0365	0.9380	1.5680	7.1649
Enwealth Diaspora & Expatriates Retirement Fund	2017	0.0635	1.0000	1.6418	7.4691
	2018	0.0277	1.0000	1.4860	7.4211
	2019	0.0882	0.8750	0.9118	7.4344
	2020	0.0327	0.8990	0.7956	7.4408
	2021	0.0327	0.7143	0.6188	7.4577
Dry Associates Personal Provident Plan	2017	0.2284	0.9380	1.0494	7.1018
	2018	0.3270	0.9091	0.7956	7.0967
	2019	0.2227	0.8889	0.6495	7.0904
	2020	0.2210	0.9167	0.6850	7.1179
	2021	0.2283	0.9000	0.8274	7.1249
CPF Individual Pension Scheme	2017	0.2175	1.0000	0.6214	7.1984
	2018	0.2715	1.0000	1.2494	7.2791
	2019	0.2842	0.8890	0.9985	7.3376
	2020	0.2461	0.7143	1.4241	7.4162
	2021	0.2692	0.8990	1.5200	7.4263
CIC (Jipange Personal Pension Plan)	2017	0.3188	0.9167	0.5531	6.5049
	2018	0.3282	0.9333	0.7350	7.5107
	2019	0.3134	1.0000	0.5475	7.5376
	2020	0.0600	1.0000	0.8323	7.5084
	2021	0.0642	0.7500	1.2338	7.6403
Chancery Personal	2017	0.0383	0.8990	0.8533	7.6508

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
Pension Plan					
	2018	0.0409	0.7140	0.9362	8.3898
	2019	0.1052	0.9167	0.7038	8.4802
	2020	0.1249	0.9167	1.5759	8.5279
	2021	0.1203	0.8333	1.5392	8.5719
CFC Life Individual Pension Plan	2017	0.2358	0.9375	2.2120	8.6261
	2018	0.1874	0.8750	2.2265	7.6734
	2019	0.1596	0.8889	2.2665	7.7973
	2020	0.1253	0.9000	3.0110	7.6170
	2021	0.1372	0.8330	1.2633	7.6754
British American Personal Pension Plan	2017	0.0661	0.8670	1.1535	7.6856
	2018	0.0758	0.8750	1.0683	7.1251
	2019	0.0722	0.9440	0.7225	7.0917
	2020	0.0795	0.7500	0.5202	7.1023
	2021	0.0795	1.0000	1.1515	7.1695
Benefits At Work Personal Pension Scheme	2017	0.0868	0.8889	0.9985	7.1649
	2018	0.0940	0.8333	0.8278	7.4691
	2019	0.0215	0.8889	0.8314	7.4211
	2020	0.0961	0.9090	0.6253	7.4344
	2021	0.0562	0.7140	0.9044	7.4408
Apollo Insurance Co. Ltd. Individual Pension Arrangement	2017	0.0812	0.9000	0.6952	7.4577
	2018	0.0910	0.8667	0.7589	7.1018
	2019	0.0507	0.7500	1.1507	7.0967
	2020	0.0743	0.9091	0.4991	7.0904
	2021	0.0581	0.9000	0.6157	7.1179
Securicor Services Scheme	2017	0.0650	0.9091	0.9182	7.1249
	2018	0.0540	0.8889	1.3433	7.1984
	2019	0.0468	0.8000	1.6103	7.2791
	2020	0.0138	0.9000	1.8041	7.3376
	2021	0.0138	1.0000	1.6465	7.4162
British American Insurance Umbrella Retirement Fund	2017	0.3482	0.9412	1.3569	7.4263
	2018	0.2536	0.9000	0.5875	8.2161
	2019	0.0833	0.8182	1.0541	8.2482
	2020	0.0851	0.9000	1.5925	8.2873

Pension Fund	Year	ROI	Portfolio diversification	Fund liquidity	Fund size
	2021	0.0991	0.8889	2.1825	8.2934
Amana Umbrella Pension Scheme	2017	0.2214	0.8333	1.6103	7.0270
	2018	0.3650	0.8330	1.8041	6.9998
	2019	0.0561	0.7500	0.8533	6.9773
	2020	0.0168	0.9444	0.9362	6.9368
	2021	0.1243	0.8990	1.1110	6.9339
Co-optrust Investment Retirement Benefits Scheme	2017	0.0912	0.8000	1.4241	6.8581
	2018	0.1378	0.8889	1.5200	6.8614
	2019	0.1111	0.8000	0.5531	6.9607
	2020	0.0781	0.8000	0.7350	7.0390
	2021	0.0672	0.8990	0.5475	7.1179
Zamara Fanaka Retirement Fund (Provident & Pension Sections)	2017	0.0664	0.8890	0.8323	8.3379
	2018	0.0664	0.8000	1.2338	8.4239
	2019	0.0673	0.9091	0.8533	8.4141
	2020	0.0547	0.8330	0.9362	8.4557
	2021	0.0547	0.9091	0.7038	8.4859
The Kenyan Alliance Insurance Company Limited Umbrella Fund	2017	0.0420	0.9091	1.5759	8.3379
	2018	0.2936	0.9091	1.5392	8.4239
	2019	0.1131	0.8889	2.2120	6.7611
	2020	0.1881	1.0000	2.2265	6.7943
	2021	0.2053	0.9333	2.2665	8.2879