ORGANIZATION FACTORS AFFECTING ASSET ALLOCATION BY UMBRELLA PENSION SCHEMES IN KENYA DURING COVID-19

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DECLARATION

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

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DEDICATION

I dedicate this research thesis to my beloved parents, Mr. Reuben Wanyingi and Mrs. Joyce Wanyingi, and to my dear siblings, Mr. Moses Gathara and Mr. Patrick Githinji, for their unwavering support, encouragement, constant belief in me, and unconditional love throughout this journey.

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VT OMNES
VNVM SINT

ABSTRACT

In Kenya, the pension industry's primary goal is to ensure wealth sustainability for its members. However, the continual low performance of the industry, particularly during and after COVID-19, has challenged this critical objective. This study used three theories being Modern Portfolio Theory, Arbitrage Portfolio theory and Risk-Return Trade-Off theory. The general objective of the study was to establish the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19. The specific objectives were to determine the effect of size of the pension scheme, age of the pension scheme, market position of the pension scheme and type of pension scheme on asset allocation in Kenya. The target population was 44 fund managers of the 44 registered pension schemes in Kenya where a census of all the fund managers was used. The research employed both primary data and secondary data. The primary data was collected through a semi-structured online questionnaire. The secondary data was sourced from RBA industry reports and the annual reports of the umbrella pension schemes from years 2018 to 2023. The study used descriptive statistics and multivariate regression analysis was used to determine association between the company characteristics and the tactical and strategic allocations. The open-ended questions were analyzed through content analysis and presented in themes. It was established that asset allocation had variations over the years from the year 2018 to the year 2023. Before the COVID-19 pandemic, pension schemes adopted strategic, long-term asset allocation focused on growth and diversification. There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya before, during and after COVID-19. The study concluded that the COVID-19 pandemic significantly influenced asset allocation changes within umbrella pension schemes in Kenya due to heightened uncertainty and market volatility caused by the pandemic by adjusting their investment strategies. Organizational factors affecting asset allocation changes included internal governance structures, risk management frameworks and decision-making processes within pension schemes. Management's ability to quickly reassess and realign asset allocation strategies based on real-time market data was critical in maintaining the financial stability of pension schemes during the pandemic. The study recommends that governments should develop policies that promote the diversification of pension fund investments and that encourage pension schemes to adopt flexible investment strategies that can quickly adapt to changing market conditions. Governments should also introduce regulatory frameworks that mandate stress testing of pension schemes' asset portfolios to ensure they can withstand economic shocks. Governments should provide incentives for pension schemes to invest in sustainable and resilient asset classes such as green bonds or infrastructure projects to reduce vulnerability to future crises. The study recommends that pension scheme managers implement robust risk management frameworks that allow for real-time monitoring and adjustment of asset allocation strategies during periods of market volatility.

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LIST OF ABBREVIATIONS AND ACRONYMS

APT:	Arbitrage Portfolio Theory
CAPM:	Capital Asset Pricing Model
CBK:	Central Bank of Kenya
COVID:	Coronavirus Pandemic
EABL:	East African Breweries Limited
ERB:	Ethical Review Board
ESG:	Environmental, Social and Governance
FTSE:	Financial Times Stock Exchange
IRA:	Insurance Regulatory Authority
KNBS:	Kenya National Bureau of Statistics
LISREL:	Linear Structural Relationships
MGARCH-DCC:	Multivariate GARCH -Dynamic Conditional Correlation
MODWT:	Maximal Overlap Discrete Wavelet Transform
MPT:	Modern Portfolio Theory
MSMEs:	Small and Medium Enterprises
NACOSTI:	National Commission for Science, Technology and Innovation
NMG:	Nation Media Group
NSE:	Nairobi Securities Exchange
NSSF:	National Social Security Fund
RBA:	Retirement Benefits Authority
SPSS:	Statistical Package for the Social Sciences
UK:	United Kingdom

DEFINITION OF KEY WORDS

Organizational Factors: This refers to the internal characteristics, structures and dynamics within an organization that influences its decisions regarding the allocation of assets (Heneghan & Orenstein, 2019).

Strategic Allocation of Assets: This refers to the long-term plan or framework for distributing investments across different asset classes within a portfolio (Gavrikova, Volkova, & Burda, 2020).

Tactical Allocation of Assets: This refers to the short to medium-term adjustments made to an investment portfolio's asset allocation in response to changing market conditions, economic trends, or other external factors (Kanuri, Malm & Malhlotra, 2021).

Size of the Scheme: This refers to the scale or magnitude of a particular pension scheme or retirement fund in terms of total value of assets (Dang, Li & Yang, 2018).

Age of the Scheme: This refers to the length of time that a particular pension scheme or retirement fund has been in existence since its establishment (Obben & Waayer, 2011).

Market Position of the Scheme: This refers to the competitive standing or position of a pension scheme or retirement fund within the broader financial marketplace in terms of market share (Hyde & Dixon, 2018).

Capital Structure of the Scheme: This refers to the composition of the financial resources used by a pension scheme or retirement fund to finance its operations and investments (Kindermann, 2015).

CHAPTER ONE: INTRODUCTION TO THE STUDY

1.1 Background to the Study

Asset allocation by umbrella pension schemes involves the strategic distribution of pension fund assets across various investment categories to balance risk and return in line with members' long-term retirement goals (De Longis & Ellis, 2023). Typically, umbrella schemes invest in a mix of equities, fixed income securities, property, offshore investments and alternative assets (De Longis & Ellis, 2023). The allocation is often influenced by factors such as age profile of members, risk appetite, regulatory requirements, and market conditions. Younger members may be allocated more to equities for higher growth potential, while older members may be shifted towards conservative investments like bonds. Regulatory guidelines provide limits to mitigate risk and ensure diversification (Zhao & Sutcliffe, 2021). Additionally, schemes often employ professional fund managers to monitor and adjust asset allocations periodically to align with changing economic environments and scheme objectives. This strategic allocation is crucial to safeguard members' savings and optimize retirement benefits (Kibata & Njeru, 2023).

The rapid global onset of the coronavirus pandemic (COVID-19) forced businesses to change their tactics and strategies in response to altered demand and consumption patterns (Gollakota & Shu, 2023). The COVID-19 pandemic had a significant influence on the tactical and strategic allocation of assets across sectors and industries, changing investment strategies and portfolio management methodologies in response to unprecedented market volatility and economic uncertainty (Butt, 2022). At the tactical level, the pandemic's early impact was marked by increased market volatility, panic selling, and liquidity worries as investors responded to the virus's rapid spread and associated economic disruptions. In this extremely unpredictable climate, tactical asset allocation techniques aimed to preserve capital, manage risk, and capitalise on short-term market dislocations (Wullweber, 2020). In the early phases of the pandemic, investors sought sanctuary in conventional safe-haven assets like government bonds, gold, and defensive shares (Butt, 2022).

During COVID-19, increased demand for remote work solutions, telemedicine, and online shopping drove investors to overweight sectors including technology, healthcare and e-commerce in their portfolios (Sivakumar et al., 2021). Meanwhile, industries such as transport, hotel, and energy encountered severe issues, resulting in underweight or divestiture choices. As the pandemic progressed, strategic asset allocation choices shifted

to include longer-term concerns and position portfolios for recovery and resilience. Strategic investors reviewed their asset allocation strategies, revised risk-return profiles, and altered long-term investment themes in light of shifting economic dynamics and structural transformations (Notteboom et al., 2021).

One noticeable trend in strategic asset allocation has been a greater emphasis on environmental, social and governance (ESG) issues as investors recognize the need for sustainability, resilience, and corporate responsibility in a post-pandemic world (Dmuchowski et al., 2023). ESG factors gained importance as investors tried to include non-financial measures into their investment decision-making process and align portfolios with larger social aims and ideals. Furthermore, the pandemic accelerated previously established trends towards digitization, remote work, and healthcare innovation, spurring strategic investments in industries and themes primed to profit from these secular transformations. Investors positioned portfolios for long-term growth prospects, making investments in technological infrastructure, digital transformation efforts, and healthcare innovation critical imperatives (Abhayawansa & Mooneeapen, 2022).

Globally, Kocaarslan and Soytas (2021) in Turkey found that deteriorating financial liquidity circumstances had a significant negative impact on the volatilities of high-risk portfolios relative to low-risk portfolios during the COVID-19 pandemic. Volatilities in high-risk portfolios were substantially related with worsening funding liquidity constraints in interbank markets, particularly during the COVID-19 panic episodes. It appeared that a loss in the risk-bearing capacity of financial intermediaries enhanced the volatilities of high-risk portfolios more significantly when financial intermediaries associated an increase in volatility with poor investment prospects in global markets. Timonina-Farkas (2021) in Switzerland observed that the increase in the number of infections affects financial market and asset behaviour as COVID-19 pandemic exposed a lack of effective multi-stage investing techniques for non-stationary returns with significant volatility.

According to Chudzinski et al. (2023) from Spain, the COVID-19 pandemic threatened the existence of numerous businesses and had to make unprepared decisions to safeguard corporate operations and sustain the performance required to survive the crisis caused by lockdowns and disruptions in supply chains. Carletti et al. (2020) in Italy noticed that as a result of the COVID-19 shock and the subsequent lockdown, many enterprises saw their income evaporate while their expenditures continued to mount, resulting in a financial

crisis. In regard to asset allocation, as of March 31, 2024, UK pension funds' asset allocations total market value increased from £1,111 billion to £1,179 billion (6%) between September 30, 2023, and March 31, 2024 (Office for National Statistics, 2024). Notably, the allocation to UK-listed equities has seen a significant decline over the past decades. Currently, only about 4.4% of UK pension fund assets are invested in domestic equities, a sharp decrease from over 50% 25 years ago. This trend places the UK among the lowest in domestic equity allocation among developed economies (Office for National Statistics, 2024).

Regionally, Akingbade (2021) in Nigeria observed that the COVID 19 pandemic constituted a significant threat and challenge to the business world, particularly Micro, Small and Medium Enterprises (MSMEs). In Nigeria, total pension assets rose to $12 billion in 2023, representing a 22.34% increase from the $9.8 billion in year 2022. The growth in pension assets was largely driven by the mandatory nature of pension contributions and positive investment returns during the year (Nigeria Pension Industry Report, 2024). According to Makoni and Chikobvu (2023), the COVID-19 pandemic had severe negative impact on worldwide corporate demand and revenue owing to supply chain disruptions. In terms of asset allocation, South African pension funds have traditionally invested heavily in equities and bonds. Recent regulatory changes, such as the proposed amendments to Regulation 28 of the Pension Funds Act in February 2021, aim to increase the permitted asset allocation ceiling for certain investments from 10% to 15% by 2024 (Financial Sector Deepening Africa, 2024).

In Kenya, Salim (2021) discovered that COVID-19 had a primarily unfavorable influence on the firm's management structure, human resource culture, infrastructure, goods and production, and finances. The strategic reaction to the consequences of Covid 19 found that the corporation used tactics such as product price, service diversification, new customer management techniques and digitization. Mathias (2021) shown that COVID-19 impacted the profitability of Kenyan banks since earnings in the pre-Covid period were larger than those in the COVID-19 period. Kenyan commercial banks thus develop necessary measures to guarantee that they controlled COVID-19. As of June 2024, Kenya's retirement benefits schemes have demonstrated significant growth and diversification in their asset allocations. According to the Retirement Benefits Authority (RBA), the total assets under management increased by 14.7% to Kshs 2.0 trillion, up from Kshs 1.7 trillion in December 2023 (RBA, 2024).

1.1.1 Assets Allocation

Lumholdt et al., (2018) describe asset allocation as the process of selecting how to disperse an investor's money among nations and asset classes for investing goals. An asset class is a collection of securities that have two features, qualities and risk/return correlations. Bonds, a wide asset class, may be broken into smaller asset classes, including Treasury bonds, corporate bonds, and high yield bonds. This asset allocation is based on investor policy statements and adds to the performance of an investment (Schnetzer, 2020). Asset allocation entails making decisions on a variety of issues, including which asset classes to consider for investment, what policy weights to assign to each eligible class, determining allowable allocation ranges based on policy weights and deciding which specific securities to purchase for the portfolio among other things. However, the first two selections, rather than the selection of individual assets, account for a significant portion of the entire investment return (De Longis & Ellis, 2023).

There are two types of asset allocation strategies: strategic and tactical asset allocation. Tactical asset allocation refers to how money should be allocated at any given time based on the investor's short-term projections (De Longis & Ellis, 2023). Tactical allocation techniques may include overweighting or underweighting certain asset classes, sectors, or geographic regions depending on short-term projections (Kanuri et al., 2021). Strategic asset allocation is how portfolio funds will be allocated based on the portfolio manager's long-term estimates of projected returns, variance and covariance (Gavrikova et al., 2020). It entails the asset managers selecting asset classes as well as individual securities with superior performance to invest in (Gavrikova et al., 2020). Strategic asset allocation usually entails determining target allocations to key asset classes such as equities, bonds, cash, and alternative assets based on long-term return expectations and risk profiles (Lumholdt et al., 2018).

In Kenya, asset allocation refers to how institutional investors particularly pension schemes, insurance firms and investment funds distribute their portfolios across various asset classes to optimize returns while managing risk. The Retirement Benefits Authority (RBA) regulates pension schemes' investments through prescribed limits to ensure prudent diversification. The key asset classes and allocation trends include fixed income securities equities properties offshore investments and alternative investments. Fixed income securities include government treasury bonds and bills, which dominate asset allocations due to their stability and attractive returns. Equities form a significant portion (around 15–

25%) of the portfolio. Properties typically account for about 10–20% of the portfolio. Offshore investments make up to 15% in offshore assets for global diversification, although uptake has been modest. Alternative investments include private equity, infrastructure funds and cash equivalents. Their share is growing as schemes seek higher returns and diversification.

1.1.2 Organization Factors Affecting Asset Allocation During COVID-19

Asset allocation decisions within organizations are influenced by various factors that reflect their goals, risk tolerance, investment horizon, regulatory environment, and market conditions. These factors shape the organization's investment strategy and determine the allocation of resources across different asset classes (Gavrikova et al., 2020). Larger investment schemes often have access to a broader range of investment opportunities due to their ability to invest larger sums of money across different asset classes. This increased capacity for diversification allows larger schemes to spread their investments more widely, potentially reducing portfolio risk (Mokaya et al., 2020). The age of an investment can significantly impact its asset allocation decisions. Younger schemes may have higher risk tolerance levels compared to older schemes. This higher risk tolerance allows younger schemes to allocate a larger proportion of their portfolio to riskier asset classes with the potential for higher returns, such as equities or alternative investments (Worzie, 2020).

The market position of an investment scheme can significantly influence its asset allocation decisions. Investment schemes with a strong market position often have access to a broader range of investment opportunities. They may receive preferential treatment from investment managers, have access to exclusive investment vehicles or deals, and benefit from economies of scale that allow them to participate in larger transactions (Schnetzer 2020). This type of pension scheme can have a significant effect on asset allocation decisions. Pension schemes vary in structure, design, and objectives, and their asset allocation strategies are tailored to meet the needs of their participants and fulfill their long-term financial obligations. Defined Benefit pension schemes promise a specified level of retirement benefits to participants based on factors such as salary history and years of service. In contrast defined contribution pension schemes accumulate contributions from participants in individual accounts with benefits determined by the performance of these accounts (Salim, 2021).

The COVID-19 pandemic had a significant influence on asset allocation in global financial markets and investment portfolios (Timonina-Farkas, 2021). This unprecedented global crisis has led investors and portfolio managers to reconsider their investment strategies, reallocate assets, and handle increased market volatility and uncertainty (Timonina-Farkas, 2021). The advent of the pandemic caused extraordinary market volatility, with major equity indexes rapidly declining followed by dramatic recovery. In response, investors created tactical asset allocation methods to capitalise on short-term opportunities while also managing risk (Makoni & Chikobvu, 2023). During the pandemic's early stages, investors fled to safe-haven assets and liquidity preservation tactics. Faced with economic uncertainty and the possibility of extended lockdowns, investors prioritized capital preservation, decreased risk exposure and preferred high-quality fixed-income instruments with good credit profiles. In preparation for a prolonged economic downturn, tactical asset allocation decisions were centred on maintaining liquidity buffers, bolstering balance sheets, and limiting downside risks (Amnim et al., 2021).

1.1.3 Umbrella Pension Schemes in Kenya

In Kenya, oversight of the pension fund sector is managed by the Retirement Benefits Authority (RBA), established through legislation known as the Retirement Benefits Act of 1997. This Act outlines four primary pension schemes in Kenya: the Civil Service Pension Scheme, the National Social Security Fund, Occupational Retirement Schemes and Individual Retirement Schemes. The Civil Service Pension Scheme and the National Social Security Fund are established by specific Acts of Parliament, catering to civil servants, teachers, and formal sector employees in companies, respectively. Conversely, Occupational Retirement Schemes and Individual Retirement Schemes are established through Trust Deeds, attracting formal sector employees in companies with such schemes, as well as individuals from both the formal and informal sectors who choose to enroll voluntarily (RBA, 2023). According to the RBA website (RBA, 2023), there are five categories of pension plans registered in Kenya: defined contribution and defined benefit schemes, the National Social Security Fund (NSSF), provident and pension funds, umbrella retirement benefits schemes, occupation and individual schemes. There were 44 registered pension schemes as at December 31, 2023. Hence, my population is all registered umbrella pension schemes in Kenya as of September 30, 2023, as published by the Retirement Benefits Authority of Kenya (RBA, 2023).

This study focused mostly on umbrella retirement benefit schemes. Umbrella Retirement Benefits Schemes are pension schemes that combine money from many firms to provide a good financial protection for their employees in retirement. Members of umbrella plans are people that may lack the staff, financial resources and competence to administer a full-fledged pension system. A board of trustees governs the umbrella schemes, and they have a fiduciary obligation to act in the best interests of its members (Gatecha, 2021). Unlike other pension systems, Umbrella Retirement Benefits systems give members negotiating leverage over administrative and management expenses owing to economies of scale Asset allocation decisions in Umbrella Retirement Benefits systems must comply with the RBA investment guidelines, which outline limits on how much can be invested in various asset classes. These include equities, fixed income, cash and deposits, property/real estate, offshore investments and alternative assets (Gatecha, 2021). The total return of the pension fund is the sum of the cumulative returns on the various asset classes within each pension scheme (RBA, 2023).

1.2 Problem Statement

The COVID-19 pandemic disrupted financial markets worldwide, impacting investment strategies across various industries and sectors (Goldstein et al., 2021). In Kenya, the pension industry, already facing concerns about its ability to ensure wealth sustainability, experienced continued low performance, particularly during and after the pandemic due to severe market volatility and asset price reductions in global financial markets, including equities, fixed income and alternative asset classes (Boyante, 2023). The COVID-19 pandemic has a number of detrimental repercussions on asset allocation in pension plans, influencing both tactical and strategic decisions by pension fund management. Liquidity restrictions occurred as pension systems struggled to satisfy short-term cash flow requirements, such as pension payments and operational expenditures (Acharya & Steffen, 2020). Asset value declines, along with fewer contribution inflows, resulted in pension funding shortfalls. Pension systems often endured delays in realizing gains from alternative investments or faced challenges in leaving illiquid positions (Donald, 2022).

In Kenya, only 35% of Kenya's 44 registered umbrella pension schemes reported changes in asset allocation as a result of the COVID 19 pandemic. Cash holdings increased by 15% due to the requirement for short-term stability (RBA, 2023). Qualitative insights suggest risk aversion as the key driver, with fund managers prioritizing capital preservation despite market uncertainty (RBA, 2023). Actuarial Services East Africa (Actserv, 2022) found that

Kenya's weighted average pension fund returns in 2022 were 1.7%, much lower than the average inflation rate of 7.64%. The bad performance was linked to negative equity performance of -14% on average (Actserve, 2022). Zamara Group examined pension returns across 423 plans, including umbrella benefits schemes, and produced research finding that the average yearly returns were 2.4% compared to 12.4% in 2021 against an average inflation rate of 9.1% for the period ending December 2022 (Zamara Group, 2023).

There exist gaps regarding effect of COVID-19 on tactical and strategic allocation of assets; Amnim et al., (2021) studied the impact of COVID-19 pandemic on liquidity and profitability of firms in Nigeria and noted that the pandemic has significantly affected the liquidity and profitability of firms. However, a conceptual gap exists as the study was on the impact of COVID-19 pandemic on performance of firms and not effect of COVID-19 on asset allocation. There is a gap in the context as the examination centered on companies in Nigeria rather than pension schemes in Kenya. Salim (2021) investigated the strategic response to the COVID 19 pandemic and the performance of Nation Media Group (NMG) plc, revealing the adoption of strategies such as product pricing, service diversification, new customer management and digitization. However, a conceptual gap arises as the study focuses on managerial strategies rather than on the tactical and strategic allocation of assets. Additionally, there is a contextual gap as the examination centered on NMG plc rather than pension schemes in Kenya. Therefore, this study aimed to address these existing gaps by examining organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19.

1.3 Research Objectives and Research Questions

The general objective of the study was to establish the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19.

The study was guided by the following specific objectives;

i. To determine the effect of size of the pension scheme on asset allocation in Kenya.
ii. To establish the effect of age of the pension scheme on asset allocation in Kenya.
iii. To examine the effect of market position of the pension scheme on asset allocation in Kenya.
iv. To examine the effect of type of pension scheme on asset allocation in Kenya.
v. To examine perspectives of management on the organisational factors affecting asset allocation by umbrella pension schemes in Kenya.

The study was guided by the following research questions;

i. What is the effect of size of the pension scheme on asset allocation in Kenya?

ii. How does age of the pension scheme affect asset allocation in Kenya?

iii. What is the effect of market position of the pension scheme on asset allocation in Kenya?

iv. What is the effect of type of pension scheme on asset allocation in Kenya?

v. What is the perspectives of management on the organisational factors affecting asset allocation by umbrella pension schemes in Kenya?

1.4 Scope of the Study

This study focused on establishing the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19. The study focused on Kenyan 44 registered pension schemes as at 31st Dec 2023 as listed by the Retirement Benefits Authority of Kenya. The study employed both primary and secondary data. The researcher employed primary data which was collected through a questionnaire that had structured questions where data was collected from fund managers of the 44 registered pension schemes. Secondary data was collected from the Retirement Benefits Authority (RBA) and Kenya National Bureau of Statistics (KNBS) report for the period 2018-2023. The study was undertaken from April 2024 to December 2024.

1.5 Significance of the Study

1.5.1 Policy Makers and Regulators

The study's findings will help policymakers understand the influence of COVID-19 on pension fund asset allocation, allowing them to match investment goals with larger economic objectives and promote post-pandemic recovery efforts. Policymakers may therefore boost pension systems' resilience and sustainability, benefiting pensioners and the country's economy as a whole. Policymakers can use pension fund assets to help with economic recovery measures including infrastructure projects, green investments, and job creation programmes.

1.5.2 Pension Fund Managers

The study will be useful to pension fund managers, who are responsible for managing pension assets on behalf of plan participants. Understanding how COVID-19 affects asset

allocation enables fund managers to make educated decisions that preserve and increase retirement savings in the face of market volatility and economic uncertainty. Fund managers may therefore constantly alter investment strategies, revising allocations to reflect changing market circumstances, economic trends, and risk-return profiles. Over time, fund managers may establish trust in scheme members, trustees, and regulators, fostering long-term partnerships and loyalty.

1.5.3 Researchers and Academicians

The study will contribute to the body of knowledge and understanding on the effect of COVID-19 on tactical and strategic allocation of assets by pension schemes. Future researchers and scholars will increase their understanding of pertinent issues concerning tactical and strategic allocation of assets in other organizations and how pandemics affect tactical and strategic allocation of assets.

1.6 Chapter Summary

The chapter focuses on the background to the study which has been discussed in regard to the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19. The chapter has discussed problem statements and research objectives which include asset allocation changes and the organizational factors affecting asset allocation changes at umbrella pension schemes in Kenya during COVID-19. The chapter also includes scope of the study and significance of the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Chapter two focuses on the purpose of the study which was to establish the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19. The chapter was organized into theoretical review, review of prior empirical studies, summary of knowledge gaps arising from this review, the conceptual framework and operationalization of the study variables.

2.2 Theoretical Review

The study adopted three theories that included Modern Portfolio theory, Arbitrage Portfolio theory and Risk-Return Trade-Off theory to achieve the objective of the study.

2.2.1 Modern Portfolio Theory

Harry Markowitz (1952) coined Modern Portfolio Theory (MPT) in the article on portfolio mixing (Markowitz, 2010). The theory posits that investors make rational decisions in order to maximize rewards while minimising risk. They base their investing decisions on the predicted returns and risks of various assets. It also presupposes that investors are risk-averse, which means they choose less risk over more risk when given the same amount of return. Investors strive to earn the best feasible return for a given level of risk, or the lowest possible risk for a given level of return (Kumar, 2018). It is assumed that investors seek to maximize the utility or satisfaction obtained from their investment decisions. The utility function takes into account both the projected return and the risk of the investment. It presupposes that all investors have similar expectations for asset performance in the future. It also presumes that investors have access to all essential information about available investment opportunities and can process this information efficiently (Francis & Kim, 2013).

MPT emphasizes the value of diversification in lowering portfolio risk. By diversifying their assets across asset classes, industries, and geographic locations, investors can reduce the influence of individual asset volatility on overall portfolio performance. MPT identifies the efficient frontier, or the ideal mix of assets that provides the maximum projected return for a given degree of risk. Plotting risk return trade-offs for various portfolio compositions, investors can determine the most efficient portfolios that maximize profits while minimising risk (Buttell, 2010). MPT uses correlations between asset returns to determine how investments interact with one another. By analysing correlations,

investors may create portfolios that are resistant to market volatility and unforeseen occurrences. MPT emphasizes long-term investing concepts and seeks to maximize portfolio efficiency over lengthy time horizons. Diversifying across asset classes and rebalancing portfolios on a regular basis allows investors to capitalise on market opportunities while efficiently managing risk (Francis & Kim, 2013).

Critics of the theory claim that markets are not always efficient, and asset prices might diverge from their inherent values as a result of behavioural biases, market inefficiencies, and irrational investor behaviour. This can cause mispricing and distortions in portfolio performance. Critics contend that MPT-based portfolios may not be adequately diversified to withstand extreme market downturns or black swan events, resulting in large losses during times of market stress (Kumar, 2018). The theory is significant to our study because it provides a framework for pension funds to properly manage risk by diversifying their asset allocations. Pension funds can utilize the idea to build dynamic asset allocation methods that react to changing market environments and economic situations. By balancing risk and return through diversification, regulatory compliance, liquidity management, and inflation hedging, pension funds in Kenya can navigate the economic uncertainties of the pandemic. Thus, the theory was relevant in establishing the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19.

2.2.2 Arbitrage Portfolio Theory

Arbitrage Portfolio Theory (APT), developed by economist Stephen Ross in 1976, explores the relationship between the returns of a portfolio's assets and the linear combination of various independent macroeconomic factors (Roll & Ross, 1984). The idea posits that asset returns are influenced by several risk variables rather than a single one. These risk factors may include macroeconomic variables like interest rates, inflation, GDP growth, or industry specific ones. The APT model posits a linear connection between asset returns and underlying risk variables. This implies that changes in risk variables are exactly proportionate to changes in asset returns, allowing for clear analysis and interpretation (Dybvig & Ross, 2003). APT posits that there are no arbitrage possibilities in financial markets, thus investors cannot make risk-free profits by leveraging price differences between assets. It believes that financial markets are totally efficient, implying that all relevant information is instantly reflected in asset prices, and hence investors cannot continuously outperform the market by exploiting mispricing or inefficiencies (Ross, 2013).

The theory enables the examination of asset returns using several risk variables rather than simply one, as in the Capital Asset Pricing Model (CAPM). This gives investors a more complete knowledge of the sources of risk and reward in financial markets, helping them to make better investment decisions. APT enables investors to identify and quantify risk sources in their investment portfolios (Karatzas & Kardaras, 2021). Understanding how diverse factors impact asset returns allows investors to better manage their exposure to various forms of risk, lowering portfolio volatility and improving risk-adjusted returns. APT provides a framework for building diversified portfolios that maximize return while minimising exposure to certain risk variables. Investors can diversify their portfolios across numerous sources of risk by picking assets with varied factor sensitivities. APT enables risk arbitrage tactics by recognising market mispricing or inefficiencies. By leveraging disparities between asset prices and their underlying risk characteristics, investors can generate risk-free returns and enhance portfolio performance (Akkaya, 2021).

Critics of the idea argue that arbitrage possibilities exist and will be promptly seized by reasonable investors, resulting in market prices correcting to eliminate any mispricing. However, arbitrage possibilities may be difficult to find or exploit due to transaction costs, market frictions, and knowledge asymmetries. It presupposes that markets are efficient and that asset prices take into account all available information. However, if markets are not fully efficient, APT may fail to effectively reflect the influence of new information or market sentiment on asset values, resulting in mispricing and model errors (Karatzas & Kardaras, 2021).

The idea is pertinent to this study because it can help pension systems discover mispriced assets based on their exposure to systematic risk factors. It can also inform strategic allocation decisions by providing insights into the underlying risk factors driving asset returns. By considering multi-factor risks (interest rates, inflation, market volatility, liquidity needs, and exchange rate fluctuations), pension schemes in Kenya can adjust their asset allocations to balance returns and risk exposure. APT enabled fund managers to make data-driven decisions, ensuring financial sustainability amid economic uncertainty. Thus, the theory was relevant in establishing the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19.

2.2.3 Risk-Return Trade-Off Theory

Harry Markowitz, the proponent of Risk Return Trade-Off theory, stated in 1952 that the risk and return of a given asset influence an investor's decision, and that for every higher level of risk taken, investors expect a higher return to compensate for the high risks (Lettau & Ludvigson, 2010). The idea posits that investors make rational decisions based on available information and risk/return assessments. Given their risk preferences, they attempt to maximize utility or satisfaction. It also implies that investors may diversify their portfolios by investing in a variety of assets with varying risk-return profiles. Diversification enables investors to lower overall portfolio risk while maintaining possible profits (Lettau & Ludvigson, 2010). It also presupposes that all investors in the market have equal expectations for future returns and risk. This enables the integration of individual preferences into market-wide risk and return expectations (Salvador, 2012).

Investors apply the idea to create portfolios that balance risk and return based on their risk preferences. Investors seek optimal portfolio performance by diversifying their investments among assets with varying risk-return characteristics. The theory helps investors make educated judgements on where to put their capital (Bonomo et al., 2015). It assists investors in determining the possible return of an investment in relation to the degree of risk involved, allowing them to select assets that are appropriate for their risk tolerance and investing objectives. The theory serves as the foundation for asset pricing models and valuation methodologies in financial markets. It gives a framework for understanding how asset values are determined based on the risk-expected return connection (Bonomo et al., 2015).

Critics claim that the theory concentrates primarily on risk and return, ignoring other essential aspects such as liquidity, market mood, and macroeconomics. These characteristics have a substantial influence on investing results and should be considered alongside the risk-return trade-off. The theory presupposes a short-term time horizon, which may not be appropriate for long-term investors or institutional investors such as pension funds, who require a more sophisticated approach to risk management and return optimisation (Salvador, 2012).

The theory was useful in this study because it would assist pension fund managers in determining the best asset mix to meet their long-term return targets while keeping risk to acceptable levels. Pension funds employ the risk-return trade-off theory to analyse the advantages and downsides of each asset type. The Risk-Return Trade-Off theory can play

a critical role in guiding umbrella pension schemes in Kenya during COVID-19. By weighing risk against potential returns, schemes adjusted asset allocations to ensure financial stability, liquidity and long-term growth. Thus, the theory was relevant in establishing the organization factors affecting asset allocation by umbrella pension schemes in Kenya during COVID-19.

2.3 Empirical Literature

This section involves review of past studies in regard to the organization factors affecting asset allocation by umbrella pension schemes which include size of the pension scheme, age of the pension scheme, market position of the pension scheme and type of pension scheme.

2.3.1 Size of the Pension Scheme

Ngugi and Njuguna (2018) investigated how pension fund size and design influence investment strategies in Kenya. Using secondary data from 206 pension funds and validating results through focus group discussions, the study found that larger schemes tend to adopt riskier investment strategies compared to smaller ones. It was revealed that pension funds are instrumental in providing retirement income to households, development funds to governments and capital to the corporations. However, the design of the pension fund (defined contribution vs. defined benefit) does not significantly affect the investment strategy. The authors recommend that trustees focus on aligning investment strategies with the fund's objectives to avoid exposing members to excessive risk.

Zhao and Sutcliffe (2021) conducted a study on determinants of the asset allocation of defined benefit pension funds. The research analyzed panel data from 125 FTSE 100 companies between 2003 and 2019 to examine what drives equity allocations in defined benefit (DB) pension schemes. Using fixed-effects panel regression, the study found that scheme maturity significantly influences asset allocation, with less mature schemes allocating more to equities. An inverted U-shaped relationship was observed between funding ratio and equity allocation, suggesting that both underfunded and overfunded schemes reduce equity exposure. Sponsor characteristics also played a role; for instance, higher sponsor leverage and larger sponsor size were linked to lower equity allocations. Pension schemes closed to new members or contributions were also more conservative in their allocations. The findings highlight the need for tailored asset allocation strategies based on both scheme and sponsor-specific factors.

Michael, Nwabuisi and Trimisiu (2022) conducted an empirical study titled on firm attributes and value of pension fund administrators (PFAs) in Nigeria. Utilizing an ex-post facto research design, the study employed a purposive sampling technique to select 15 PFAs from a pool of 22 that had been operational for at least ten years (2011–2020). Data were extracted from the published annual reports and accounts of these companies. The analysis utilized both descriptive and inferential statistics. The findings revealed that firm attributes such as firm age, size, contribution density, number of contributors, board size, board quality, and branch network jointly exerted a significant impact on the net asset value per unit of PFAs. The study concluded that these attributes enhance the value of PFAs in Nigeria.

2.3.2 Age of the Pension Scheme

Oyoo (2020) studied factors affecting financial performance of pension schemes in Kenya. The study found that while membership age negatively correlates with financial performance, the relationship is not statistically significant. This suggested that, although older schemes may have a more mature membership base, their age does not directly impact financial outcomes. The research emphasized that other factors, such as risk management, member contributions, and firm size, play more substantial roles in determining performance. The study concluded that pension schemes should focus on these critical factors to enhance financial performance, rather than solely on the age of the scheme. It recommended that pension fund managers adopt comprehensive strategies that address these determinants effectively.

Ouma (2021) investigated how the age of pension schemes affected their investment strategies in Kenya. Using a sample of 206 pension schemes, the research found that older schemes, particularly defined benefit (DB) and hybrid models, tend to adopt more conservative investment strategies. The average age of members in DB and hybrid schemes was higher compared to defined contribution (DC) schemes, influencing their asset allocation towards safer investments. Regression analysis revealed a significant relationship between scheme maturity and investment strategy, with older schemes investing less in risky assets. The study concluded that the age of a pension scheme plays a crucial role in shaping its investment approach. It was recommended that pension fund managers consider the maturity of their schemes when formulating investment strategies to balance risk and return effectively.

Ren (2022) investigated the evolution of global pension assets and the asset allocation strategies adopted by pension schemes, with a focus on the impact of scheme age on investment decisions. The research analyzed data from 22 major pension markets, totaling US$46,734 billion in pension assets, accounting for 62% of the GDP of these economies. The study concluded that the age of pension schemes significantly influences their asset allocation decisions. Older schemes are more likely to diversify their portfolios by increasing allocations to alternative assets to mitigate risks associated with market volatility. The findings suggest that pension schemes should consider their age and maturity when formulating investment strategies to ensure long-term sustainability and risk management.

2.3.3 Market Position of the Pension Scheme

Mwanzivi (2021) studied strategic orientation and competitive advantage of pension schemes in Kenya. Using a cross-sectional research design, data was collected from 31 pension firms registered with the Retirement Benefits Authority (RBA). The study found that market orientation, technology orientation, relationship orientation, and entrepreneurial orientation positively impact the competitiveness of pension schemes. Specifically, market orientation was identified as a critical dimension in aligning strategic market strategies to meet customer specifications. The research concluded that strategic orientation contributes to 79.5% of the competitiveness of pension schemes in Kenya. This emphasizes the importance of strategic positioning in enhancing the market position of pension schemes. The study recommended that pension schemes adopt comprehensive strategic orientations to maintain a competitive edge in the market.

Nkosi et al., (2021) investigates the impact of market position on the asset allocation strategies of pension funds in South Africa. It focuses on how pension schemes position themselves in the market and the subsequent effects on their asset management practices, particularly for large and medium-sized funds. The research adopts a mixed-methods approach, combining both qualitative and quantitative techniques. Data was collected through structured surveys from 50 pension funds operating in South Africa. The study concluded that pension funds with a solid market position in South Africa tend to engage in more diversified and complex investment strategies. These strategies are better equipped to withstand economic fluctuations, ensuring long-term sustainability. The findings suggested that pension funds should leverage their market position to optimize asset

allocation decisions, with particular emphasis on risk mitigation and achieving higher returns.

Kinyua et al. (2022) studied investment strategy and financial performance of defined contribution pension funds in Kenya. The research utilized a descriptive research design, analyzing data from pension funds in Kenya. The study established that a positive association exists between investment strategy and financial performance of defined contribution pension funds in Kenya. The research suggested that the market position of a pension scheme, determined by its investment strategies, affects its financial performance. The findings highlight the importance of strategic positioning in achieving financial success for pension schemes. The study recommended long term investments as the most ideal investment option for defined contribution pension funds because of its ability to generate the highest return on investment.

2.3.4 Type of the Pension Scheme

Zhao and Sutcliffe (2021) focused on what determines the asset allocation of defined benefit pension funds. This study investigated the factors influencing the asset allocation decisions of defined benefit (DB) pension funds in the UK. The authors analyzed data from DB pension schemes of FTSE 100 companies over the period 2003–2019, employing regression analysis to examine the impact of various factors on equity-bond allocation. The study found that DB pension schemes' asset allocations are influenced by factors such as scheme maturity, sponsor size, leverage, cash flow volatility, and scheme closure status. Notably, the research highlights that there is no one-size-fits-all approach to asset allocation, as decisions vary based on the unique circumstances of each scheme.

Nyang'oro and Njenga (2022) examined the different types of pension schemes in Rwanda and their respective asset allocation strategies. The paper conducted a comprehensive review of Rwanda's mandatory and voluntary pension schemes, analyzing their asset allocation patterns and investment strategies. The report identified that Rwanda's mandatory pension scheme is a fully funded defined benefit (DB) plan, while voluntary schemes include complementary occupational and personal pensions. It notes that the asset allocation strategies vary between these schemes, with DB plans typically focusing on stable, long-term investments, while voluntary schemes may exhibit more flexibility in their investment approaches.

Kandie et al. (2023) studied systematic risk and investment portfolio performance of pension schemes in Kenya. The study found that asset allocation to guaranteed funds significantly moderates the relationship between systematic risk and performance. While scheme type was not a primary focus, the findings suggest that older schemes, with their longer investment horizons, may benefit from allocating more to guaranteed funds to mitigate risks. The research highlighted the importance of strategic asset allocation in managing systematic risks and enhancing performance. It recommended that pension schemes carefully consider their asset allocation to balance risk and return effectively. The study underscores the need for pension fund managers to adapt their strategies to the evolving economic environment. The findings suggest that scheme type influences investment decisions and risk management practices.

2.4 Summary of Empirical studies and Research Gaps

Studies have been done on the effect of COVID-19 on tactical and strategic allocation of assets. Thus, this section sought to evaluate knowledge gaps in regard to the effect of COVID-19 on tactical and strategic allocation of assets by umbrella pension schemes in Kenya.

Author	Topic	Findings	Research Gap
Ngugi and Njuguna (2018)	The influence of pension fund size and design on investment strategies in Kenya	The key finding was that larger pension schemes tend to adopt riskier investment strategies compared to smaller ones.	The study relied primarily on secondary data and focus group discussions, which might have limited the generalizability of the findings. While the study examined pension fund size and design, it did not explore the broader socio-economic factors influencing pension fund investments in Kenya.

Zhao and Sutcliffe (2021)	Determinants of asset allocation in defined benefit pension funds	The study found that higher sponsor leverage and larger sponsor size were associated with lower equity allocations.	The study focused on a fixed-effects regression model which may not account for other non-linear or dynamic factors influencing asset allocation. The study does not consider broader external market factors, such as economic cycles, that could also influence asset allocation decisions. The study focused on UK pension funds which limit the generalizability of the findings.
Michael et al. (2022)	Firm attributes and value of pension fund administrators (PFAs) in Nigeria	The results revealed that attributes such as firm age, size, contribution density, number of contributors, board size, board quality, and branch network collectively had a significant positive impact on the net asset value per unit of PFAs.	The study relied on secondary data from annual reports, which may limit the depth of understanding of the underlying mechanisms driving PFA performance. The study does not explore the conceptual relationship between firm attributes and specific investment strategies. While the study focused on Nigerian PFAs, the findings may not be generalizable to other African countries
Oyoo (2020)	Factors that affect the financial performance of pension schemes in Kenya	The study found that while membership age negatively correlates with financial performance, this relationship was not statistically significant.	The study use of correlation analysis may have been too simplistic to fully capture the complex factors that influence pension scheme performance. he study did not explore the specific mechanisms by which risk management and other organizational factors influence asset allocation strategies.

Ouma (2021)	The impact of scheme age on investment strategies of pension schemes in Kenya	The study concluded that the age of a pension scheme is a crucial factor in shaping investment strategies	The study's use of regression analysis might have missed some dynamic factors such as market conditions. The study was limited to age as investment strategies and did not take into account the global impact of the COVID-19 pandemic on pension schemes in Kenya.
Ren (2022)	The evolution of global pension assets and the role of scheme age in asset allocation	The study concluded that older pension schemes are more likely to diversify their portfolios by increasing allocations to alternative assets like private equity and real estate to mitigate risks from market volatility.	While the study focused on scheme age, it did not address the broader organizational factors, such as governance, management practices, and member demographics, that could also affect asset allocation strategies. The study's focus was on global trends, and it did not consider the unique challenges faced pension schemes in Kenyan context.
Mwanzivi (2021)	Strategic orientation and competitive advantage of pension schemes in Kenya	The study found that strategic orientations such as market orientation, technology orientation, relationship orientation, and entrepreneurial orientation positively influence the competitiveness of pension schemes.	The study used a cross-sectional design, which provides a snapshot but does not account for changes over time. While the study focused on strategic orientations, it did not examine how these factors directly influence asset allocation decisions.

Nkosi et al. (2021)	Impact of market position on the asset allocation strategies of pension funds in South Africa	The study concluded that pension funds with a strong market position tend to adopt more diversified and complex investment strategies.	While the study linked market position to asset allocation strategies, it did not explore how specific organizational factors, such as governance or management practices, influence these strategies. The study focused on South Africa, and its findings may not be directly applicable to other countries, such as Kenya.
Nyang'oro and Njenga (2022)	Asset allocation strategies among mandatory and voluntary pension schemes in Rwanda	The study observed that DB plans favored stable, long-term investments (like government securities and real estate), whereas voluntary schemes employed more flexible, sometimes higher-risk strategies.	The study was primarily descriptive and relied on secondary sources. Empirical validation using statistical analysis or case studies would strengthen the findings. While scheme type was considered, other internal organizational factors were not explored. The study is based in Rwanda, and the findings may not fully apply to Kenyan umbrella pension schemes.
Kandie et al. (2023)	Systematic risk and investment portfolio performance of pension schemes in Kenya	Although scheme type was not the primary focus, the research implied that internal scheme characteristics (e.g., age, fund maturity, and investment horizon) influence allocation decisions and risk management.	The study did not explicitly model the pandemic's effects or test asset allocation shifts pre- and post-COVID-19. It did not explicitly link broader organizational factors like governance quality or sponsor support to asset allocation. Though based in Kenya, the study did not focus specifically on umbrella pension schemes or the unique pressures they faced during COVID-19.

2.5 Conceptual Framework

The independent variables were size of the scheme, age of the scheme, market position of the scheme and capital structure of the scheme while the dependent variable was tactical and strategic changes in assets allocation.

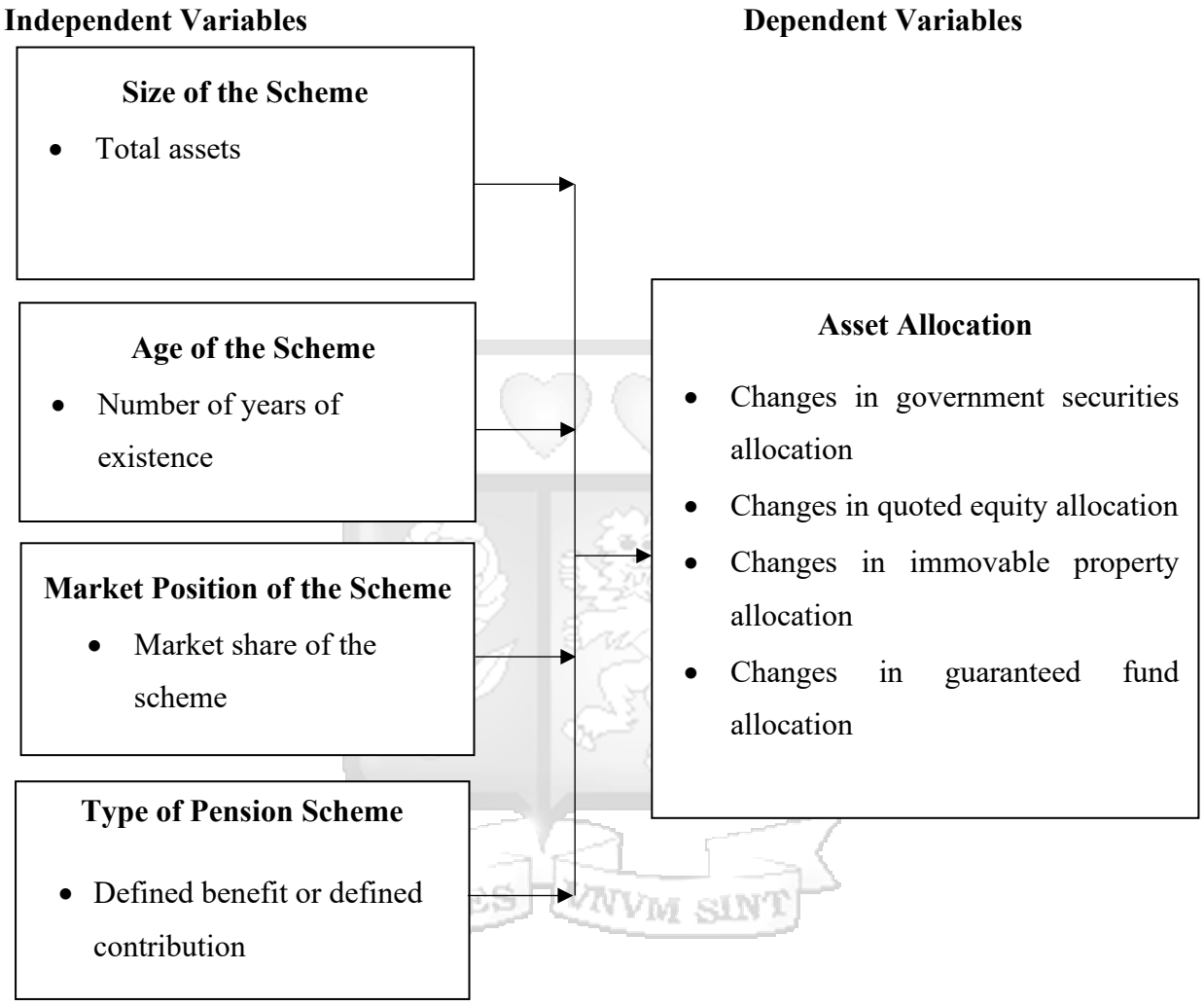

Figure 2.1: Conceptual Framework

2.6 Operationalization of the Variables

Table 2.1 below indicates the operationalization of the independent and dependent variables of the study. The measurements, supporting studies, study-based theories and the test of variables are highlighted.

Table 2.1: Operationalization of the Variables

Variable	Measurement of Variable	Supporting Past Studies	Supporting Theories	Data Source	Analysis
Dependent Variables					
Asset allocation	• % Changes in government securities allocation • % Changes in quoted equity allocation • % Changes in immovable property allocation • % Changes in guaranteed fund allocation		Risk-Return Trade-Off Theory	RBA industry reports and Questionnaire	Descriptive statistics, trend analysis and regression analysis
Independent Variable					
Size of the scheme	• Log of total assets	Chache (2021); Habakkuk et al. (2023)	MPT and APT	RBA industry reports and Questionnaire	Descriptive statistics, trend analysis and regression analysis
Age of the Scheme	• Number of years of existence	Worzie (2020); Wahyudi, Hasanudin	MPT and APT	RBA industry reports and Questionnaire	Descriptive statistics, trend analysis and regression analysis

		and Pangestutia (2020)			
Market position of the scheme	• Market share of the scheme	Chache (2021); Mokaya et al. (2020)	MPT and APT	RBA industry reports and Questionnaire	Descriptive statistics, trend analysis and regression analysis
Dummy Variable					
Type of pension scheme	• Defined benefit or defined contribution	Munywoki (2019); Zhao and Sutcliffe (2021)	MPT and APT	Secondary data from RBA	Descriptive statistics, and regression analysis

2.7 Chapter Summary

The literature review began by looking at the theories that guided the study that included Modern Portfolio theory, Arbitrage Portfolio theory and Risk-Return Trade-Off theory to achieve the objective of the study. Modern Portfolio theory posits that investors make rational decisions in order to maximize rewards while minimising risk. Arbitrage Portfolio theory explores the relationship between the returns of a portfolio's assets and the linear combination of various independent macroeconomic factors. The idea posits that asset returns are influenced by several risk variables rather than a single one. Risk Return Trade-Off theory indicates that the risk and return of a given asset influences an investor's decision, and that for every higher level of risk taken, investors expect a higher return to compensate for the high risks. The idea posits that investors make rational decisions based on available information and risk/return assessments. The empirical studies in regard to asset allocation indicated that there have been changes in asset allocation in firms over the years. In regard to organizational factors affecting asset allocation, it was revealed that the size of the scheme, age of the scheme, market position of the scheme and type of pension scheme affected asset allocation. Asset allocation has been operationalized into percentage changes in government securities allocation, quoted equity allocation, immovable property allocation and guaranteed fund allocation. The size of the scheme has been operationalized into log of total assets, age of the scheme into number of years of existence, market position of the scheme into market share of the scheme and type of pension scheme into defined benefit or defined contribution.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The research methodology section provides an overview of the various approaches employed for collection of data, the steps involved in conducting the study and the techniques utilized to analyze and make sense of the collected information.

3.2 Research Philosophy

Research philosophy refers to the set of beliefs, principles, and assumptions that guide the researcher's approach to conducting research. It underpins the researcher's worldview and influences their choice of research methods, data collection techniques, and data analysis procedures (Saunders et al., 2012). The three main types of research philosophy are objective epistemology (positivism), subjective epistemology (interpretivism) and constructivism research philosophy (Mbanaso et al., 2023). Positivism is a research philosophy based on the belief that knowledge can be acquired through empirical observation and experimentation. It emphasizes the use of scientific methods to uncover objective truths and seeks to establish causal relationships between variables. Positivist researchers aim to be objective and impartial in their observations and interpretations, and they often use quantitative data and statistical analysis to test hypotheses (Bell et al. 2022). Interpretivism, also known as constructivism or phenomenology, is a research philosophy that emphasizes the subjective understanding of social phenomena. It recognizes that individuals interpret and give meaning to their experiences based on their unique perspectives and cultural contexts. Interpretivism researchers often use qualitative methods such as interviews, observations, and document analysis (Saunders et al., 2012).

Constructivism is a research philosophy that asserts that knowledge is actively constructed by individuals based on their experiences, interactions and interpretations of the world around them. Constructivism emphasizes the subjective nature of reality and importance of understanding how individuals perceive and make sense of their environments (Bell et al., 2022). The positivist research philosophy was used in this study. The positivist research philosophy was used to identify patterns, relationships, or causal effects between organizational factors and asset allocation during the COVID-19 period (Bell et al., 2022).

3.3 Research Design

A research design refers to the overall plan or structure that outlines the systematic and logical approach to conducting a research study (Kothari, 2014). The study utilized a panel research design which is a research method that combines elements of both cross-sectional and longitudinal design by collecting data from the same subjects over multiple time periods (Saunders et al., 2012). This allows researchers to track changes over time while maintaining comparability across units of analysis. A cross-sectional research design is a type of research methodology in which data is collected from a sample or the entire population of interest at a single point in time to describe the characteristics, behaviors, attitudes and attributes of the study participants or to assess the prevalence of specific variables (Saunders et al., 2012). The cross-sectional aspect investigated the impact of the COVID-19 pandemic on the tactical and strategic allocation of assets by umbrella pension schemes in Kenya.

Longitudinal research design is a study method that involves repeated observations of the same individuals or groups over an extended period of time. It is often used to track changes, trends, or developments in the subjects being studied, providing valuable insights into causality and patterns over time (Saunders et al., 2012). The design was used in highlighting the effect of the various organization factors affecting asset allocation by umbrella pension schemes in Kenya over time.

3.4 Population and Sampling

3.4.1 Population of the Study

Population refers to the entire group of individuals or elements that the researcher is interested in studying and drawing conclusions about (Mugenda & Mugenda, 2012). The target population refers to the specific subset or group within the larger population that the researcher aims to study and make inferences about (Kothari, 2014). Kothari (2014) notes that target population is often more narrowly defined than the overall population and represents the individuals or elements that the researcher intends to include in the study sample. The target population was 44 fund managers of the 44 registered pension schemes in Kenya as of September 30, 2023 (RBA, 2023).

3.4.2 Census

Sampling techniques are methodologies employed by researchers to choose a subgroup of individuals or entities from a broader population with the intention of conducting a study

(Erik & Marko, 2019). The choice of sampling techniques depends on various factors, including the research objectives, available resources, and the nature of the population. A census sampling was used for this study. A census is a comprehensive and exhaustive data collection process that involves gathering information from every single unit or element that makes up a particular population or sample (Dubey & Kothari, 2022). The census method was chosen because the target population is small, there are diverse items to be covered and also because there is need for a high degree of reliability and accuracy (Dubey & Kothari, 2022).

3.5 Data Collection and Tools

Data collection refers to the process of gathering information or observations relevant to the research objectives. This process involves systematically collecting, recording, and organizing data from various sources, which can include primary sources such as surveys, interviews and observations and secondary sources such as existing databases, documents and literature (Cooper & Schindler, 2013). The study utilized a combination of primary and secondary data sources. Primary data was obtained through semi-structured questionnaires. Closed-ended questions were presented using Likert scales due to their reliability and ability to yield substantial data compared to other scales. Open-ended questions address the study's objectives to gather additional insights. The questionnaire comprised two sections: the first section captured demographic details of respondents, while the second section focused on aspects related to the study objectives. This approach aims to gather comprehensive information and ensure that the research objectives are effectively addressed.

The secondary data was collected using a data collection sheet as the data collection method. The secondary data was sourced from RBA industry reports and the annual reports of the various pension schemes. This data was in regard to various allocation of assets in all the pension schemes combined together. The research encompassed a five-year period, ranging from 2018 to 2023, during which data was collected. The periods were divided into pre-pandemic from year 2018 to 2019 (2 years), during pandemic in year 2020 to 2021 (2 years) and post pandemic year 2022 to year 2023 (2 years). This approach enabled the researcher to have a better comparison of asset classification in the pension schemes during the two periods. This approach ensured an adequate number of data points to account for changes that have transpired in asset classification in the pension schemes.

3.6 Data Analysis

The data collected were both quantitative and qualitative. For quantitative data, both descriptive and inferential statistical methods were applied for analysis. Descriptive statistics such as mean, standard deviation, frequency, and percentages summarized the quantitative data. Inferential statistics, specifically multiple regression analysis, were used to explore relationships among variables. Statistical analysis was conducted using SPSS version 25, and the findings were presented through tables to facilitate interpretation.

A Panel regression model was used in establishing the relationship amongst the independent variables and dependent variable. The specific type of panel regression model (e.g., Pooled OLS, Fixed Effects, Random Effects) were chosen after data analysis to account for unobserved effects through conducting Hausman test (Guggenberger, 2010).

The regression model was as follows:

$Y_{it} = \beta 0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \epsilon_{it}$

Where:

Y_{it} = Changes in asset allocation for firm $_i$ at time $_t$

X_{1it} = Size of the scheme for firm i at time t

X_{2it} = Age of the scheme for firm i at time t

X_{3it} = Market position of the scheme for firm i at time t

X_{4it} = Type of Pension Scheme for firm i at time t

β0 represents the constant term, while β1, β2, β3, and β4 denote the beta coefficients used to assess the sensitivity of the dependent variable (Y) to changes in a unit of the independent variables.

ε = Error term

The t-test was used to assess the individual significance of the predictor variables in this study. The interpretation of p-values was conducted at a significance level of 5%. If the p-value is less than 0.05, it indicates the variables' significance.

The open-ended inquiries underwent content examination and was showcased based on identified themes.

3.7 Research Quality

The researcher ensured data quality by verifying that the methods and instruments employed are dependable, generating consistent outcomes when replicated by other researchers. To achieve this, a pilot study was conducted using a sample of 5 employees from the ICEALION Umbrella Retirement Benefits Scheme. However, these individuals did not participate in the main study. As per Mugenda and Mugenda (2012), conducting a pre-test involving 10% of the total sample size is considered adequate for forming the pilot group.

3.7.1 Reliability of Instruments

Reliability refers to the extent to which a measurement or instrument consistently produces the same results over time and across different conditions when used in the same manner. It indicates the stability and consistency of the measurement process. In other words, a reliable measure should yield similar results when applied repeatedly to the same phenomenon under unchanged circumstances (Bell et al., 2022). Reliability was tested using the test-retest method of internal consistency. The test-retest method involves administering the same measurement instrument to the same group of participants on two separate occasions, with a certain time interval between the tests. The reliability of the measurement is then determined by examining the consistency of scores obtained from the two test administrations. If the scores are highly correlated or similar across the two administrations, it indicates that the measurement is reliable. (Cooper & Shindler, 2013). Cronbach's Alpha statistical measure of internal consistency reliability was used. High internal consistency indicates that the items are measuring the same underlying construct consistently. Cronbach's Alpha values range from 0 to 1, with higher values indicating greater internal consistency. The value of 0.70 of Cronbach's Alpha was deemed to be reliability (Bell et al., 2022).

3.7.2 Validity of Instruments

According to Cooper and Shindler (2013) validity in research refers to the extent to which a study accurately measures what it intends to measure. It is the degree to which the research findings and conclusions are credible and trustworthy. The types of validity include internal validity, external validity, construct validity, content validity and criterion validity. The study used content validity which refers to the extent to which a measurement instrument adequately covers all relevant aspects of the construct or concept

being measured. It ensures that the items included in the instrument represent the entire range of the construct and effectively capture its content domain. Content validity was used as it ensures that the measurement instrument accurately reflects the content domain of the construct under study. By including items that are relevant to the construct, the researcher obtained meaningful and interpretable results that align with the research objectives (Bell et al. 2022).

3.8 Diagnostic Tests

The study undertakes various diagnostic tests that include test for Fixed and Random effect, test for normality, Multicollinearity and Heteroscedasticity.

3.8.1 Test for Fixed and Random Effect

The study conducted a Hausman test to determine whether the coefficients estimated in a fixed effects model are significantly different from those estimated in a random effects model (Guggenberger, 2010). If the computed Hausman statistic is greater than the critical value, you reject the null hypothesis and conclude that the random effects model is inconsistent. In this case, you would prefer the fixed effects model. If the computed statistic is less than the critical value, you fail to reject the null hypothesis, indicating that the random effects model is consistent and efficient (Ahn & Moon, 2014).

3.8.2 Test for Normality

Prior to performing regression analysis, it is expected that the research data should follow a normal distribution. Non-normal distribution of research data may lead to biased and inefficient estimates. The Shapiro-Wilk test was employed to evaluate the normality of the data (Das & Imon, 2016). When the p-value is less than 0.05, the null hypothesis is rejected, indicating that there is sufficient evidence to conclude that the analyzed results did not originate from a normally distributed population. If the data deviates significantly from normality, the researchers would consider limiting extreme values by either replacing them with a less extreme value or removing them can sometimes improve normality (Das & Imon, 2016).

3.8.3 Multicollinearity

Multicollinearity occurs when there is a linear relationship among independent variables, resulting in inflated standard errors (Daoud, 2017). The research utilized the VIF test to determine if there is significant and problematic evidence of multicollinearity. If the VIF

factor is found to be less than 10, multicollinearity would not be a concern in the analysis. Adjusting for multicollinearity involved making changes to the model structure or the variables themselves to mitigate the correlation issue. If the VIF values is greater than 10, the research would remove one or more of the highly correlated variables from the model, combine or transform variables to reduce correlation or use regularization techniques (Daoud, 2017).

3.8.4 Test for Heteroscedasticity

The presence of heteroscedasticity does not affect the fairness or linear association of regression coefficients. Heteroscedasticity occurs when the variability of the error term varies across independent variables. The Breusch-Pagan test was used to evaluate the existence of heteroscedasticity in the data (Rosopa et al., 2013). The null hypothesis is rejected when the p-value is less than 0.05, indicating the presence of heteroscedasticity in the data. If the assumptions of regression cannot be met, the researcher applied logarithmic transformation to both the dependent and independent variables may help stabilize the variance similarly the researcher used nonparametric methods, such as Spearman's rank correlation, which does not assume constant variance (Rosopa et al., 2013).

3.9 Ethical Considerations

The researcher obtained necessary approvals prior to commencing the study, including ethical clearance from both the University Ethical Review Board (ERB) and the National Commission for Science, Technology and Innovation (NACOSTI). Ethical considerations were paramount throughout the research process, particularly in the administration of the questionnaire to participants. Respondents was assured of the confidentiality of their identity and the information they provide, with a commitment that their responses would not be used against them in any way. To ensure anonymity, respondents were instructed not to include personal identifiers on the questionnaires. Additionally, explicit consent was sought from participants before they were given the questionnaire, emphasizing that their participation is entirely voluntary. Participants retained the right to withdraw from the study at any stage without repercussion.

3.10 Chapter Summary

This chapter presented the research methodology which was applied in analysis of questions of research. The positivist research philosophy and constructivism research philosophy were used in this study. The study adopted a descriptive research design. The

target population was 44 fund managers of the 44 registered pension schemes in Kenya as of September 30, 2023. The study utilized a combination of primary and secondary data sources. Primary data was obtained through semi-structured questionnaires. The secondary data was collected using a data collection sheet as the data collection method. The secondary data was sourced from RBA industry reports and the annual reports of the various pension schemes. The research encompassed a six-year period, ranging from 2018 to 2023, during which data was collected. The data collected was both quantitative and qualitative. For quantitative data, both descriptive and inferential statistical methods were applied for analysis. Statistical analysis was conducted using SPSS version 25 and the findings were presented through tables. A Panel regression model was used in establishing the relationship amongst the independent variables and dependent variables. The t-test was used to assess the individual significance of the predictor variables in this study. A pilot study was conducted using a sample of 5 employees from the ICEALION Umbrella Retirement Benefits Scheme to test for reliability and validity of instruments.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

The chapter presents the results of the study, as well as an analysis of those results. The researcher presents the data that was collected during the study in a clear and organized manner. The data can be presented using tables and charts. The researcher also provides an explanation of the findings and how they relate to the research questions.

4.2 Response Rate

The researcher handed out questionnaires to 44 fund managers of the 44 registered pension schemes in Kenya. Of the 44 questionnaires distributed, 39 were filled and returned, resulting in a response rate of 88.64%. The response rate for the secondary data was 34 out of the 44 registered pension schemes in Kenya resulting in a response rate of 77.27%. Kothari (2014) considers a response rate of 50% as satisfactory and more than 70% as excellent. Mugenda and Mugenda (2012) define a response rate of 50% as sufficient, 60% as very good, and over 70% as excellent. Therefore, the study's response rate was sufficient based on this data.

4.3 Background Information

4.3.1 Work Position

From the qualitative data all respondents indicated that they worked as fund managers within their respective pension schemes. This uniformity in the respondents' work positions suggests that the insights gathered are from individuals directly involved in managing pension funds and making critical decisions related to asset allocation, risk management, and investment strategies. As fund managers, these respondents are likely to have a comprehensive understanding of the factors influencing the financial performance of pension schemes, including the impact of economic fluctuations, regulatory changes, and market dynamics. Their expertise positions them to provide valuable perspectives on how pension funds are managed, especially in response to challenges like the COVID-19 pandemic, which has necessitated tactical and strategic adjustments in asset allocation to safeguard the financial stability and growth of the schemes they oversee.

4.3.2 Experience of Service in the Pension Industry

Respondents were asked to indicate their experience of service in the pension industry

Table 4.2: Respondents Experience of Service in the Pension Industry

Period of service	Frequency	Percent
Less than 5 years	7	18
5 to 10 years	14	36
More than 10 years	18	46
Total	**39**	**100**

The largest group of respondents, accounting for 46%, reported having more than 10 years of experience in the pension industry. The next largest group, making up 36% of the respondents, indicated to have between 5 to 10 years of experience while the smallest segment of the respondents 18% had less than 5 years of experience in the pension industry. Overall, the distribution shows a good balance of experience levels among the respondents which can provide a comprehensive understanding of the sector's dynamics and future directions.

4.4 Organizational Information

4.4.1 Asset Allocation in the Scheme

The table below presents data on the aggregated size of a specific scheme over a six-year period, from 2018 to 2023.

Table 4.3: Asset Allocation in the Scheme

Year	Government Securities Allocation	Quoted Equity Allocation	Immovable Property Allocation	Guaranteed Fund Allocation
2018	13,679,846,000	4,901,379,000	4,054,431,000	22,268,522,000
2019	16,218,482,953	6,975,012,865	5,042,537,000	26,043,355,770
2020	24,981,455,297	8,311,644,808	4,965,623,000	30,613,858,834
2021	33,471,535,970	9,709,117,311	5,659,126,000	37,027,386,308
2022	43,401,853,593	13,215,976,402	6,256,164,000	44,970,157,889
2023	50,449,853,899	10,995,825,961	8,346,591,000	46,227,019,408

From the trend analysis, it was established that asset allocation had variations over the years from the year 2018 to the year 2023. Before COVID-19 in the years 2018 and 2019 the government securities allocation was Ksh 13,679,846,000 in the year 2018 and in the year 2019 it was Ksh 16,218,482,953. The quoted equity allocation was Ksh 4,901,379,000 in the year 2018 and in the year 2019 it was Ksh 6,975,012,865. It was established that immovable property allocation was Ksh 4,054,431,000 in the year 2018 and in the year 2019 it was Ksh 5,042,537,000. The guaranteed fund allocation was Ksh 22,268,522,000 in the year 2018 and in the year 2019 it was Ksh 26,043,355,770.

During COVID-19 in the year 2020 and the year 2021 government securities allocation was Ksh 24,981,455,297 and in the year 2021 it was 33,471,535,970. The quoted equity allocation in the year 2020 was Ksh 8,311,644,808 in the year 2021 it was 9,709,117,311. Immovable property allocation in the year 2020 was Ksh 4,965,623,000 and in the year 2021 it was 5,659,126,000. The guaranteed fund allocation in the year 2020 it was Ksh 30,613,858,834 and in the year 2021 it was 37,027,386,308.

After COVID-19 in the year 2022 and the year 2023 government securities allocation was in the year 2022 it was Ksh 43,401,853,593 while in the year 2023 it was Ksh 50,449,853,899. The quoted equity allocation in the year 2022 was Ksh 13,215,976,402 while in the year 2023 it was Ksh 10,995,825,961. Immovable property allocation in the year 2022 was Ksh 6,256,164,000 while in the year 2023 it was Ksh 8,346,591,000. The guaranteed fund allocation in the year 2022 was Ksh 44,970,157,889 while in the year 2023 it was Ksh 46,227,019,408.

Based on the above results, it's clear that asset allocation have been increasing over the years apart from immovable property allocation which decreased in the year 2020, during COVID-19. From the above data it is also clear that there were no significant changes in asset allocation before, during and after COVID-19.

4.4.2 Years of Operation

The data below shows the distribution of the number of years that pension schemes have been in existence.

Table 4.4: Number of years which the pension scheme has been in existence

Period	Frequency	Percent
Less than 8 years	4	10.3
8 to 15 years	14	35.9
More than 15 years	21	53.8
Total	39	100

The data reveals that a significant proportion (53.8%) of the pension schemes have been in existence for more than 15 years, about 35.9% of the pension schemes have been operating for a period between 8 to 15 years, only 10.3% of the pension schemes have been in existence for less than 8 years. This indicates that over half of the pension schemes are well-established and likely have extensive experience and stability in managing pension funds.

4.4.3 Growth in Market share of the scheme in percentage

The data provided shows the market share of a particular scheme in percentage terms over a six-year period from 2018 to 2023.

Table 4.5: Growth in Market share

Period	Percent
2018	19%
2019	22%
2020	16%
2021	18%
2022	28%
2023	33%

Before COVID-19 in the year 2018, the scheme market share grew by 19% which had further grew to 22% in 2019. However, this was followed by a decrease to 16% growth rate in the year 2020 and there was a decline in growth rate in the year 2021 to 18% compared to earlier years. This was potentially attributed to external factors such as the economic downturn caused by the COVID-19 pandemic which may have affected the scheme's

performance or competitiveness. The COVID-19 pandemic also had a profound impact on the growth in market share of pension schemes in Kenya, driven by economic disruptions, financial strain on individuals and businesses, and shifts in priorities.

After a dip in year 2022, the market share increased to 28% in 2022 and further to 33% in 2023 suggests that the scheme implemented successful strategies, such as organizational restructuring, improved service offerings, or more effective market positioning. The consistent growth during these years reflects a period of stabilization and strong performance. By 2023, the scheme achieved its highest market share of 33%. This peak demonstrates robust growth and possibly increased confidence among stakeholders, better customer acquisition and retention strategies, or a more favorable economic environment. The substantial growth from 18% in 2021 to 33% in 2023 could also imply a period of aggressive expansion or successful differentiation from competitors.

4.4.4 Type of the Pension Scheme

The data below provides an overview of the types of pension schemes indicated by respondents, categorized as either defined benefit or defined contribution

Table 4.6: Type of the Pension Scheme

Period	Frequency	Percent
Defined benefit	19	48.7
Defined contribution	20	51.3
Total	39	100

The data reveals a nearly equal distribution between defined benefit (48.7%) and defined contribution (51.3%) pension schemes among respondents, indicating that both types of schemes are commonly offered. Defined contribution schemes have a slight majority, reflecting a possible shift towards plans where retirement benefits depend on contributions and investment performance, thus transferring more risk to employees and reducing financial liability for employers. However, the significant presence of defined benefit schemes, which guarantee a fixed retirement benefit, suggests that many organizations continue to prioritize providing predictable retirement income, appealing to employees who prefer financial certainty in retirement. This balanced landscape highlights the diversity in organizational approaches to managing retirement benefits and addressing varied employee preferences.

4.4.5 Factors that Influence Changes by Pension Schemes in Asset Allocation

Before the COVID-19 pandemic, the respondents indicated that the Kenya's economic environment influenced asset allocation. Before the COVID-19 pandemic, pension schemes in Kenya adjusted their asset allocation strategies based on several influencing factors aimed at balancing risk, returns and regulatory compliance. One key driver was the regulatory framework established by the Retirement Benefits Authority (RBA). The RBA set limits on asset classes, such as maximum allocations to equities or real estate, compelling schemes to align their investments with these guidelines. Additionally, economic performance shaped decisions, with periods of growth favoring equities for higher returns. Interest rate trends were another critical factor. High interest rates made fixed-income securities attractive. Similarly, market performance particularly on the Nairobi Securities Exchange (NSE) influenced allocations with bullish markets increasing interest in equities.

The respondents indicated that during the COVID-19 pandemic in 2020 and 2021, pension schemes in Kenya faced unique challenges that influenced changes in asset allocation. The economic downturn caused by the pandemic led to widespread job losses and reduced contributions, prompting schemes to prioritize liquidity to meet benefit payouts. Market volatility saw pension funds reduce exposure to equities to minimize losses. Instead, they shifted towards safer fixed-income assets like government securities, which offered stability amid uncertainty. Additionally, declining interest rates on fixed-income investments forced schemes to explore alternative assets, such as private equity or real estate, for better returns. The pandemic heightened the need for diversification, including offshore investments, as global markets presented opportunities for recovery. Inflationary pressures also influenced allocation strategies, with schemes seeking inflation-hedging assets. Lastly, increased early withdrawals by financially distressed members further shaped asset allocation, emphasizing liquidity and capital preservation.

The respondents indicated that after the COVID-19 pandemic began to subside in the year 2022, pension schemes in Kenya adjusted their asset allocation strategies to reflect a new economic and investment landscape. The recovery phase brought opportunities and challenges that uniquely influenced these changes. As markets stabilized, schemes increased allocations to equities. This shift aimed to capitalize on post-pandemic economic recovery and higher returns. Similarly, real estate investments rebounded, with schemes targeting sectors like affordable housing and commercial properties as the economy

reopened. Diversification became critical, with schemes exploring offshore investments to mitigate local market risks. Regulatory shifts, including enhanced Retirement Benefits Authority (RBA) guidelines, also influenced allocation strategies. The need for long-term growth and capital restoration after pandemic withdrawals saw schemes refocus on balanced portfolios that aligned with emerging opportunities and member needs.

4.5 Management Perspectives about Effect of Covid on Asset Allocation

4.5.1 Whether COVID-19 Pandemic Affect the Asset Allocation in Pension Scheme

The table below shows respondents' opinions on whether the COVID-19 pandemic affected asset allocation within their pension schemes. The data reflects the extent to which the pandemic necessitated adjustments to manage risks and ensure stability.

Table 4.7: Whether COVID-19 pandemic affect the asset allocation in pension scheme

Opinion	Frequency	Percent
Yes	35	89.7
No	4	10.3
Total	**39**	**100.0**

The data shows that the majority of respondents, 89.7%**,** believe that the COVID-19 pandemic affected asset allocation in their pension schemes, while only 10.3% reported that it did not have an impact. This response suggests that the pandemic had a significant influence on how pension schemes adjusted their investment strategies. Qualitative information also revealed that due to economic uncertainty, market volatility, and disruptions caused by COVID-19 many pension schemes were prompted to reconsider their asset allocation to manage risk, protect capital, and ensure liquidity. This involved shifting towards safer investments such as bonds or other fixed-income securities, reducing exposure to volatile assets like equities, or even increasing allocation to alternative assets that could provide more stability during uncertain times.

4.5.2 Tactical and Strategic Shifts in Asset Allocation Before, During and After COVID-19

The respondents indicated that before the COVID-19 pandemic, pension schemes adopted strategic, long-term asset allocation focused on growth and diversification. Investments in equities, real estate and government securities dominated portfolios supported by a relatively stable economic environment. The schemes aimed to balance risk and return

while aligning with RBA guidelines. With steady contributions from the formal sector, there was a focus on maximizing growth over time.

The respondents indicated that during the COVID-19 pandemic, tactical adjustments became essential to navigate heightened uncertainty. The economic downturn, job losses, and market volatility compelled pension funds to prioritize liquidity to meet increased withdrawals. Allocations shifted toward low-risk assets, such as government bonds, to preserve capital amidst falling stock market performance. Low-interest rates also prompted schemes to explore alternative assets like private equity to maintain returns. Tactical decisions focused on short-term survival and risk management.

The respondents indicated that after the pandemic, a blend of strategic and tactical adjustments emerged as schemes adapted to the recovery phase. With economic stabilization, pension funds increased allocations to equities and real estate to leverage growth opportunities. Inflation concerns drove investments in inflation-hedging assets, including infrastructure and offshore markets. Strategic diversification became key to managing long-term risks while aligning with new regulatory guidelines.

4.5.3 Challenges Encountered in Asset Allocation During the COVID-19 Pandemic

Respondents were required to clarify whether they encountered challenges in asset allocation during the COVID-19 pandemic.

Table 4.8: Challenges Encountered in Asset Allocation During COVID-19

Opinion	Frequency	Percent
yes	33	84.6
No	6	15.4
Total	39	100.0

In the survey, 84.6% of respondents reported facing challenges in asset allocation during the COVID-19 pandemic, reflecting the significant disruptions caused by market volatility, economic uncertainty, and liquidity constraints. This high percentage indicates that most pension schemes struggled to adjust their portfolios and manage increased risks amid the crisis. Conversely, 15.4% of schemes did not face challenges, suggesting that some schemes had robust strategies or adaptability to withstand financial turbulence. These findings highlight the pandemic's broad impact on asset allocation in the pension industry.

4.5.4 Effect of COVID-19 Factors on Asset Allocation of Pension Schemes

The table below presents the level of likelihood of the effect of various COVID-19 factors on the asset allocation of pension schemes. The interpretation is based on the mean scores and standard deviations, starting from the highest to the lowest mean.

Table 4.9: Effect of COVID-19 Factors on Asset Allocation of Pension Schemes

Statement	N	Mean	Std. Dev
Fluctuations in financial markets	39	3.15	1.06
Uncertainty surrounding economic recovery	39	2.82	0.94
Disruptions in financial markets and reduced liquidity in certain asset classes	39	3.00	1.00
Increased default risk associated with corporate bonds and other fixed-income securities	39	2.79	1.20
Changes in regulatory requirements and government policies in response to the pandemic	39	1.95	0.92

From the findings, majority of the respondents agreed that fluctuations in financial markets had the highest likelihood of affecting asset allocation, as shown by a mean of 3.15 and a standard deviation of 1.06. Disruptions in financial markets and reduced liquidity in certain asset classes also had a relatively high likelihood of influence, with a mean of 3.00 and a standard deviation of 1.00. The mean score indicates that respondents rated this factor as quite likely to affect asset allocation, with a somewhat consistent agreement among them.

Further Uncertainty surrounding economic recovery was next, with a mean of 2.82 and a standard deviation of 0.94. The mean suggests that this factor was perceived as having a moderate to high likelihood of affecting asset allocation. The lower standard deviation indicates a closer clustering of responses around the mean, reflecting a stronger consensus among respondents. Increased default risk associated with corporate bonds and other fixed-income securities had a mean of 2.79 and a higher standard deviation of 1.20. While the mean suggests a moderate likelihood of this factor affecting asset allocation, the higher standard deviation indicates a wider variation in responses, suggesting mixed views on the impact of default risk.

It was revealed that changes in regulatory requirements and government policies in response to the pandemic had the lowest likelihood of affecting asset allocation, with a mean of 1.95 and a standard deviation of 0.92. This lower mean score suggests that respondents viewed changes in regulations and policies as less likely to influence asset allocation decisions compared to other factors, and the relatively low standard deviation indicates reasonable agreement among respondents.

4.5.5 Extent to Which COVID-19 Affected Assets Allocation of Pension Schemes

The table below presents respondents' assessments of the extent to which the COVID-19 pandemic affected asset allocation within their pension schemes. Participants rated the impact on a scale from 1 to 5, where 1 indicates "Not at all," 2 signifies "Slight extent," 3 represents "Moderate extent," 4 denotes "Great extent," and 5 indicates "Very great extent." This scale allows for a nuanced understanding of the pandemic's influence on asset allocation decisions across different pension schemes.

Table 4.10: COVID-19 Effect on Assets Allocation of Pension Schemes

Statement	N	Mean	Std. Dev
COVID-19 pandemic impacted the diversification of assets within our pension scheme	39	3.79	0.95
COVID-19 pandemic affected the risk tolerance of our pension schemes in its asset allocation decisions	39	4.08	0.66
COVID-19 pandemic influenced the selection of investment instruments within our pension schemes	39	4.13	0.80
COVID-19 pandemic affected the strategic planning process for asset allocation in our pension schemes	39	3.82	0.97

Respondents agreed to a great extent that COVID-19 pandemic influenced the selection of investment instruments within our pension schemes as shown by a mean of 4.13 and low std of 0.80 and that COVID-19 pandemic affected the risk tolerance of our pension schemes in its asset allocation decisions as shown by a mean of 4.08 and low std of 0.66. It was also established that COVID-19 pandemic affected the strategic planning process for asset allocation in within pension schemes (mean = 3.82 std dev =0.97) and that COVID-19 pandemic impacted the diversification of assets within most of the pension schemes (mean = 3.79 std dev =0.95).

4.5.6 Adjustments on Asset Allocation by Management in Response to COVID-19

The table below presents the level of agreement regarding how management has adjusted asset allocation in response to the COVID-19 pandemic; the interpretation is based on the mean scores and standard deviations, starting from the highest to the lowest mean:

Table 4.11: Asset Allocation Adjustments by Management During COVID-19

Statement	N	Mean	Std. Dev
Managers have effectively adjusted to asset allocations in response to the COVID-19 pandemic	39	2.82	0.45
Managers are adequately considering the long-term implications of their asset allocation decisions	39	2.51	0.76
Managers have navigated the challenges posed by the COVID-19 pandemic while optimizing asset allocations	39	2.44	0.72
Managers have integrated risk management strategies into their asset allocation decisions	39	2.59	0.50

Results revealed moderate agreement from participants that managers of pension schemes had effectively adjusted to asset allocations in response to the COVID-19 pandemic received the highest mean score of 2.82 and a standard deviation of 0.45. It was also revealed that managers were adequately considering the long-term implications of their asset allocation decisions, a mean of 2.51 and a standard deviation of 0.76.

Results showed that managers have integrated risk management strategies into their asset allocation decisions have a mean of 2.59 and a standard deviation of 0.50. The study established consensus among respondents that management has effectively navigated pandemic challenges while optimizing asset allocations, with moderate variability in opinions mean score of 2.44 and a standard deviation of 0.72.

To effectively adapt asset allocation in response to future pandemics or similar crises, pension schemes should Expand diversification across a broader range of asset classes and geographic regions to mitigate risk and reduce vulnerability to market shocks. Maintaining higher levels of liquidity within portfolios to ensure adequate cash reserves for navigating unexpected disruptions and capitalizing on market opportunities. Building and continually refining comprehensive risk management frameworks to better anticipate and address economic volatility and market instability is important. The managers should regularly

conduct scenario planning and stress tests to assess the potential impact of various crisis scenarios on asset allocation and investment performance. They should create and implement flexible investment policies that allow for swift adjustments in asset allocation in response to evolving market conditions and emerging risks.

4.6 Diagnostic Tests for Regression

The data collected using the research questionnaire was subjected to three diagnostic tests, that is, normality, multicollinearity and autocorrelation tests. The fact that the collected data were categorical (precisely, ordinal) informed the aforesaid diagnostic tests.

4.6.1 Diagnostic Tests for Secondary Data

4.6.1.1 Testing for Fixed or Random Effects

The study conducted a Hausman test to determine whether the coefficients estimated in a fixed effects or random model.

```
. hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
X1	.0014981	.0020005	-.0005024	.0011812
X2	-.0009897	.0009219	-.0019117	.0017254
X3	-.0012513	-.0006014	-.0006499	.0012197
X4	.0039354	.0008063	.0031291	.0022211

```
                b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =        4.71
                Prob>chi2 =      0.3178
```

Figure 4.2: Testing for Fixed or Random Effects

To decide between fixed or random effects a Hausman test was conducted where the null hypothesis was that the preferred model is random effects, that is if the Prob>chi2 value was greater than 0.05. The alternative the fixed effects if the Prob>chi2 value was less than 0.05. It basically tested whether the unique errors (ui) are correlated with the regressors. Since the Prob>chi2 value (0.3178) was greater than 0.05 a random effect was preferred

and conducted. The findings were in agreement with Green (2008) that the null hypothesis for the test is that the random effect model is preferred to fixed effect model and is to be rejected if the p value is less than 5% to imply that fixed model is preferred.

4.6.1.2 Testing for Random Effect

```
Breusch and Pagan Lagrangian multiplier test for random effects

        Y[number,t] = Xb + u[number] + e[number,t]

        Estimated results:
                         |        Var     sd = sqrt(Var)
                ---------+------------------------------
                       Y |    .0018424        .0429229
                       e |    .0015262        .0390669
                       u |    .0003146        .0177362

        Test:   Var(u) = 0
                              chibar2(01) =      5.38
                           Prob > chibar2 =    0.0102
```

Figure 4.3: Testing for Random Effect

The Breusch-Pagan Lagrange multiplier (LM) was conducted to help decide between a random effects regression and a simple OLS regression. The null hypothesis in the LM test was that variances across entities were zero. This is, no significant difference across units (i.e. no panel effect) since the Prob>chi2 value (0.0102) was less than 0.05 we rejected the null and concluded that random effect was appropriate. The rationale behind random effects model is that, unlike the fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables included in the model. Random effects assume that the entity's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables. This is an assurance that the regression coefficients were stable hence valid significance tests as put by Cooper and Schindler (2006).

4.6.1.3 Test for Normality

Table 4.12: Test for Normality

Variable	Obs	W	V	z	Prob>z
Asset Allocation	204	0.93063	10.124	5.319	0
Size of the Pension Scheme	204	0.95321	6.828	4.414	0
Age of the Pension Scheme	204	0.8652	19.672	6.846	0
Market Position of the Pension Scheme	204	0.93163	9.978	5.286	0
Type of the Pension Scheme	204	0.9752	3.62	2.956	0.00156

The result of the Shapiro-Wilk test included a p-value, which helps determine whether to reject the null hypothesis. If the p value is less than 0.5, there is sufficient evidence to suggest that the data are not normally distributed. If the p value is greater than 0.5, you fail to reject the null hypothesis. Thus, there is not enough evidence to suggest that the data are not normally distributed, implying that the data may be considered normally distributed. The results showed that asset allocation had p value of 0, size of the pension scheme had p value of 0 while age of the pension scheme had p value of 0. Market position of the pension scheme had p value of 0 while the type of the pension scheme had p value of 0.00156. Thus, there was sufficient evidence to suggest that the data are not normally distributed.

4.6.1.4 Multi-Collinearity

Multicollinearity affects the stability, precision, and interpretation of regression models. While it does not reduce the model's predictive power, it can distort the understanding of the relationships between variables. Detecting and managing multicollinearity is critical for ensuring accurate and reliable regression analysis.

Table 4.13: Multi-Collinearity

Variable	VIF	1/VIF
X3	3.06	0.32657
X1	2.98	0.335017
X2	2.69	0.371314
X4	2.67	0.374427
Mean VIF	**2.85**	

When variables highly correlated, it becomes challenging to isolate the individual effects of each predictor, making it hard to determine their true impact on the outcome variable. A VIF score greater than 10 suggests significant multicollinearity. The inverse of VIF, a tolerance value below 0.1 indicates high multicollinearity. The VIF was 2.85 that was below 10 an indication of absence of multicollinearity.

4.6.1.5 Test for Autocorrelation

Testing for autocorrelation is essential in panel data and regression modeling, as it helps identify whether the residuals (or errors) from a model are correlated across different time periods.

Table 4.14: Test for Autocorrelation

lags *(p)*	chi2	df	prob > chi2
1	5.169	1	0.528

In regression analysis, the presence of autocorrelation can lead to biased and inefficient parameter estimates, resulting in incorrect conclusions. In this case, the dataset's p-value (0.528) above the significance level (0.05), hence we are unable to reject the null hypothesis. These findings imply that there is no serial connection between the variables, guaranteeing objective parameter estimations and precise hypothesis testing.

4.6.2 Diagnostic Tests for Primary Data

4.6.2.1 Test of Normality

The assumption was tested using Shapiro-Wilk test. Findings are as shown in Table 4.10.

Table 4.15: Test of Normality

Variable	Obs	W	V	Z	Prob>z
Size of the Scheme	39	0.919	1.756	0.312	0.025
Age of the Scheme	39	0.883	1.592	5.214	0.010
Market Position of the Scheme	39	0.911	1.453	3.124	0.001
Capital Structure	39	0.973	1.531	0.625	0.011
Tactical and Strategic Allocation of Asset	39	0.971	1.344	0.733	0.018

The Shapiro-Wilk test is a statistical evaluation that determines whether or not a continuous variable is normally distributed. The null hypothesis (H0) states that the variable is normally distributed and the alternative hypothesis (H1) states that the variable is not normally distributed. If $p \leq 0.05$ then the null hypothesis can be rejected meaning the variable is not normally distributed, however, if $p > 0.05$ then the null hypothesis cannot be rejected meaning the variable is normally distributed. The results indicated that size of the scheme, age of the scheme, market position of the scheme and capital structure were not normally distributed as the $p \leq 0.05$.

4.6.2.2 Test of Multicollinearity

Multicollinearity test was conducted with the view of establishing the interrelationships between predictor variables and how such could potentially compromise the results of multiple regression analysis. It is indicated that multicollinearity occurs when there are several variables (more than 1 variable) in a multiple regression analysis, and which are significantly correlated to each other. Consequently, some of the significant variables under study are made to be statistically not significant (Young, 2017). Variance inflation factor is employed to measure the extent to which the variance of the estimated regression coefficient is inflated if and/or when the predictor constructs are correlated. Notably, VIF is reciprocal to T (Shrestha, 2020). Variance inflation factor less than 5 are acceptable since

they demonstrate only moderate correlation between independent variables (Gupta & Gupta, 2022).

Table 4.16: Test of Multicollinearity

	Collinearity Statistics	
Study Constructs	**Tolerance**	**VIF**
Size of the Scheme	.825	1.012
Age of the Scheme	.832	1.034
Market Position of the Scheme	.811	1.033
Capital Structure	.843	1.017

a. Dependent Variable: Tactical and Strategic Allocation of Asset

According to the results shown in Table above, all the four independent variables, that is, Market Position of the Scheme (VIF = 1.033), Age of the Scheme (VIF = 1.034), Size of the Scheme (VIF = 1.012) and Capital Structure (VIF = 1.017). This meant that there were no serious multicollinearity problems detected in the study.

4.6.2.3 Test of Autocorrelation

To evaluate autocorrelation, the Breusch Godfrey test was employed to help ensure that time series data and regression models are valid.

Table 4.17: Test for Autocorrelation

lags *(p)*	chi2	df	prob > chi2
1	5.173	1	0.521

The presence of serial correlation can distort conclusions drawn from various tests, including the Breusch-Godfrey test. In this instance, we cannot reject the null hypothesis, as the dataset's p-value (0.521) surpasses the significance threshold (0.05). These results suggest an absence of serial correlation among the variables, ensuring unbiased parameter estimates and accurate hypothesis tests.

4.7 Inferential Statistics on Organization Factors and Changes in Asset Allocation

4.7.1 Effect of Organization Factors on Changes in Asset Allocation Before COVID-19

4.7.1.1 Correlation Analysis Before COVID-19

Table 4.18: Correlation Analysis Before COVID-19

Correlation regression analysis was conducted to assess the effect of organization factors on changes in asset allocation by umbrella pension schemes in Kenya Before COVID-19.

		Asset Allocation	Size of the Scheme	Age of the Scheme	Market Position of the Scheme	Type of Pension Scheme
Asset Allocation	Pearson Correlation	1				
	Sig. (2-Tailed)					
	N	68				
Size of the Scheme	Pearson Correlation	.237	1			
	Sig. (2-Tailed)	.017				
	N	68	68			
Age of the Scheme	Pearson Correlation	.305*	.260	1		
	Sig. (2-Tailed)	.041	.084			
	N	68	68	68		
Market Position of the Scheme	Pearson Correlation	.387**	-.343*	-.108	1	
	Sig. (2-Tailed)	.009	.021	.480		
	N	68	68	68	68	
Type of Pension Scheme	Pearson Correlation	.503**	-.133	-.016	.384**	1
	Sig. (2-Tailed)	.000	.384	.916	.009	
	N	68	68	68	68	68

From table above, results showed a positive correlation between size of the scheme and asset allocation by umbrella pension schemes in Kenya as indicated by a correlation factor of 0.237. This positive relationship was found to be statistically significant as the p value

was 0.017 which was less than 0.05. The study also found a strong positive correlation between age of the scheme and asset allocation by umbrella pension schemes in Kenya as shown by correlation coefficient of 0.305; the significant value was 0.041 which was less than 0.05. The study found a positive correlation between market position of the scheme and asset allocation by umbrella pension schemes in Kenya as shown by correlation coefficient of 0.387. The significant value was 0.009 which was less than 0.05. The study found a positive correlation between type of pension scheme and asset allocation by umbrella pension schemes in Kenya as shown by correlation coefficient of 0.503. The significant value was 0.000 which was less than 0.05.

4.7.1.2 Linear Regression Analysis Before COVID-19

A linear regression analysis was conducted to assess the effect of organization factors on changes in asset allocation by umbrella pension schemes in Kenya Before COVID-19.

Table 4.19: Linear Regression Analysis Before COVID-19

Model		**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	
1		.666a	0.444	0.409	0.01847	
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0.017	4	0.004	12.58	.000a
	Residual	0.022	63	0		
	Total	0.039	67			
		Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**
Model		**B**	**Std. Error**	**Beta**		
1	(Constant)	2.006	.254		7.889	.000
	Size of the Scheme	.102	.046	.217	2.244	.027
	Age of the Scheme	.184	.057	.305	3.223	.002
	Market Position of the Scheme	.120	.047	.214	2.557	.012
	Type of Pension Scheme	.166	.064	.242	2.607	.011

From the model, R which is the correlation coefficient showed that there existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya before COVID-19 in the years between 2018 and 2019 as indicated by the

correlation coefficient of 0.666. The R-squared, also called the coefficient of determination, is the percent of the variance in the dependent variable explained uniquely or jointly by the independent variables. In this study, the model yielded an R-squared value of 0.444, indicating that 44.4% of the variations in the changes at umbrella pension schemes in Kenya before COVID-19 can be explained by organization factors for the firms.

From the ANOVA, the study established that the regression model had a significance level of 0 which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value (12.58 > 2.52) an indication that organization factors had a significant effect on changes at umbrella pension schemes in Kenya before COVID-19. The significance value was less than 0.05 indicating that the model was significant.

From the regression model obtained above, a unit change in size of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya before COVID-19 by a factor of 0.102. The p-value was 0.027, an indication that size of the scheme had a significant influence on changes at umbrella pension schemes in Kenya before COVID-19 at a 5% significance level. A unit change in age of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya before COVID-19 by a factor of 0.184. The p-value was 0.002, an indication that age of the scheme had a significant influence on changes at umbrella pension schemes in Kenya before COVID-19 at a 5% significance level.

A unit change in market position of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya during COVID-19 by a factor of 0.12. The p-value was 0.012, an indication that market position of the scheme had a significant influence on changes at umbrella pension schemes in Kenya before COVID-19 at a 5% significance level. A unit change in type of pension scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya before COVID-19 by a factor of 0.166. The p-value was 0.011, an indication that type of pension scheme had a significant influence on changes at umbrella pension schemes in Kenya before COVID-19 at a 5% significance level.

4.7.2 Effect of Organization Factors on Changes in Asset Allocation During COVID-19 Scheme

4.7.2.1 Correlation Analysis During COVID-19 Scheme

The correlation table provides the strength and direction of the relationships between organization factors and changes in asset allocation during COVID-19 Scheme.

Table 4.20: Correlation Analysis During COVID-19 Scheme

		Asset Allocation	Size of the Scheme	Age of the Scheme	Market Position of the Scheme	Type of Pension Scheme
	Pearson Correlation	1				
	Sig. (2-tailed)					
Asset Allocation	N	68				
	Pearson Correlation	.337**	1			
	Sig. (2-tailed)	.007				
Size of the Scheme	N	68	68			
Age of the Scheme	Pearson Correlation	.342**	.218	1		
	Sig. (2-tailed)	.006	.083			
	N	68	68	68		
Market Position of the	Pearson Correlation	.358**	-.070	-.110	1	
Scheme	Sig.(2-tailed) 0	.004	.581	.389		
	N	68	68	68	68	
	Pearson Correlation	.276*	-.333**	-.064	.245	1
Type of Pension	Sig.(2-tailed)	.027	.007	.616	.051	
Scheme	N	68	68	68	68	68

**. Correlation0issignificant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level 0 (2-tailed).

There was a moderately positive and significant correlation between size of the scheme and asset allocation by umbrella pension schemes in Kenya (Pearson Correlation= 0.337, significant at the 0.007 level). There is a moderate and significant correlation between age of the scheme and asset allocation by umbrella pension schemes in Kenya (Pearson Correlation = 0.342, significant at the 0.006 level).

There is a positive and significant correlation between market position of the scheme and asset allocation by umbrella pension schemes in Kenya (Pearson Correlation = 0.358, significant at the 0.004 level). There is a moderate positive and significant correlation between type of pension scheme and asset allocation by umbrella pension schemes in Kenya (Pearson Correlation = 0.276, significant at the 0.027 level).

4.7.2.2 Linear Regression Analysis

A linear regression analysis was conducted to assess the effect of organization factors on changes in asset allocation during COVID-19 Scheme.

Table 4.21: Linear Regression Analysis During COVID-19 Scheme

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	
1		.386a	0.149	0.084	0.114206	
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0.035	4	0.009	5.176	.001a
	Residual	0.105	63	0.002		
	Total	0.14	67			
		Unstandardized Coefficients		**Standardized Coefficients**	**t**	**Sig.**
Model		**B**	**Std. Error**	**Beta**		
1	(Constant)	0.04	0.031		1.3	0.198
	Size of the Scheme	0.017	0.007	-0.432	2.406	0.019
	Age of the Scheme	0.001	0.012	0.019	0.091	0.928
	Market Position of the Scheme	0.006	0.002	0.417	2.559	0.013
	Type of Pension Scheme	0.035	0.012	0.573	2.938	0.005

From the model, R which is the correlation coefficient showed that there existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya during COVID-19 in the years between 2020 and 2021 as indicated by the correlation coefficient of 0.386. The R-squared, also called the coefficient of determination, is the percent of the variance in the dependent variable explained uniquely or jointly by the independent variables. In this study, the model yielded an R-squared value of 0.149,

indicating that 14.9% of the variations in the changes at umbrella pension schemes in Kenya during COVID-19 can be explained by organization factors for the firms.

From the ANOVA, the study established that the regression model had a significance level of 0 which is an indication that the data was ideal for making a conclusion on the population parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value (5.176> 2.52) an indication that organization factors had a significant effect on changes at umbrella pension schemes in Kenya during COVID-19. The significance value was less than 0.05 indicating that the model was significant.

From the regression model obtained above, a unit change in size of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya during COVID-19 by a factor of 0.017. The p-value was 0.019, an indication that size of the scheme had a significant influence on changes at umbrella pension schemes in Kenya during COVID-19 at a 5% significance level. A unit change in age of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya during COVID-19 by a factor of 0.001. The p-value was 0.928, an indication that age of the scheme had no significant influence on changes at umbrella pension schemes in Kenya during COVID-19 at a 5% significance level.

A unit change in market position of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya during COVID-19 by a factor of 0.006. The p-value was 0.013, an indication that market position of the scheme had a significant influence on changes at umbrella pension schemes in Kenya during COVID-19 at a 5% significance level. A unit change in type of pension scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya during COVID-19 by a factor of 0.035. The p-value was 0.005, an indication that type of pension scheme had a significant influence on changes at umbrella pension schemes in Kenya during COVID-19 at a 5% significance level.

4.7.3 Effect of Organization Factors on Changes in Asset Allocation After COVID-19 Scheme Firm

4.7.3.1 Correlation Analysis After COVID-19 Scheme Firm

The correlation table provides the strength and direction of the relationships between organization factors and changes in asset allocation after COVID-19 Scheme.

Table 4.22: After COVID-19 Scheme Firm

		Asset Allocation	Size of the Scheme	Age of the Scheme	Market Position of the Scheme	Type of Pension Scheme
Asset Allocation	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	68				
Size of the Scheme	Pearson Correlation	.445**	1			
	Sig. (2-tailed)	.004				
	N	68	68			
Age of the Scheme	Pearson Correlation	.599*	.098	1		
	Sig. (2-tailed)	.000	.306			
	N	68	68	68		
Market Position of the Scheme	Pearson Correlation	.581**	.388**	.284**	1	
	Sig. (2-tailed)	.000	.201	.112		
	N	68	68	68	68	
Type of Pension Scheme	Pearson Correlation	.449**	.557**	.200*	.405**	1
	Sig. (2-tailed)	.002	.077	.134	.095	
	N	68	68	68	68	68

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

There was a moderately positive and significant correlation between asset allocation and size of the scheme (Pearson Correlation = 0.445, significant at the 0.05 level). There was a strong positive and significant correlation between asset allocation and age of the scheme (Pearson Correlation = 0.599, significant at the 0.05 level). There was a strong positive and significant correlation between the market position of the scheme and asset allocation (Pearson Correlation = 0.581, significant at the 0.05 level). There was a moderate positive

and significant correlation between type of pension scheme and asset allocation (Pearson Correlation = 0.449, significant at the 0.05 level).

4.7.3.2 Linear Regression Analysis

A linear regression analysis was conducted to assess the effect of organization factors on changes in asset allocation after COVID-19 Scheme Firm.

Table 4.23: Linear Regression Analysis After COVID-19 Scheme Firm

Model		R	R Square	Adjusted R Square	Std. Error of the Estimate	
1		.497a	0.247	0.2	0.04087	
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	0.027	4	0.007	9.641	.000a
	Residual	0.044	63	0.001		
	Total	0.071	67			
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	(Constant)	2.189	.356		6.142	.000
	Size of the Scheme	.391	.134	.353	2.928	.006
	Age of the Scheme	.299	.131	.261	2.289	.027
	Market Position of the Scheme	.390	.130	.379	3.011	.004
	Type of Pension Scheme	.630	.184	.409	3.431	.001

From the model, R which is the correlation coefficient showed that there existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya after COVID-19 in the years between 2022 and 2023 as indicated by the correlation coefficient of 0.497. The R-squared, also called the coefficient of determination is the percent of the variance in the dependent variable explained uniquely or jointly by the independent variables. In this study, the model yielded an R-squared value of 0.247, indicating that 24.7% of the variations in the changes at umbrella pension schemes in Kenya after COVID-19 can be explained by organization factors for the firms.

From the ANOVA, the study established that the regression model had a significance level of 0 which is an indication that the data was ideal for making a conclusion on the population

parameters as the value of significance (p-value) was less than 5%. The calculated value was greater than the critical value 9.641> 2.52) an indication that organization factors had a significant effect on changes at umbrella pension schemes in Kenya after COVID-19. The significance value was less than 0.05 indicating that the model was significant.

From the regression model obtained above, a unit change in size of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya after COVID-19 by a factor of 0.391. The p-value was 0.006, an indication that size of the scheme had a significant influence on changes at umbrella pension schemes in Kenya after g COVID-19 at a 5% significance level. A unit change in age of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya after COVID-19 by a factor of 0.299. The p-value was 0.027, an indication that age of the scheme had a significant influence on changes at umbrella pension schemes in Kenya after COVID-19 at a 5% significance level.

A unit change in market position of the scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya after COVID-19 by a factor of 0.390. The p-value was 0.004, an indication that market position of the scheme had a significant influence on changes at umbrella pension schemes in Kenya after COVID-19 at a 5% significance level. A unit change in type of pension scheme while holding other factors constant would positively enhance changes at umbrella pension schemes in Kenya after COVID-19 by a factor of 0.63. The p-value was 0.001, an indication that type of pension scheme had a significant influence on changes at umbrella pension schemes in Kenya after COVID-19 at a 5% significance level.

4.8 Comparison of the Primary and Secondary Data

Table 4.24: Comparison of the Primary and Secondary Data

	Primary Data	**Secondary Data**
Pre-COVID Observations	Favorable economic growth increased equity allocation. RBA caps and NSE performance heavily influenced investment behavior	There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya before COVID-19
COVID-19 Impact	Shift to safer assets (e.g., government securities); decline in contributions; rise in early withdrawals; prioritization of liquidity and capital preservation.	There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya during COVID-19 in the years between 2020 and 2021.
Post-COVID Recovery	Return to equities and real estate. Focus on diversification, offshore investments, and adapting to updated RBA regulations.	There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya after COVID-19 in the years between 2022 and 2023
Most Influential Factors	Financial market fluctuations (mean = 3.15), liquidity disruptions (mean = 3.00), economic uncertainty (mean = 2.82).	Type of scheme (r = 0.503, p = 0.000), market position (r = 0.581), and age (r = 0.599) were strongest predictors of asset allocation.

Least Influential Factor	Regulatory and government policy changes during COVID (mean = 1.95), suggesting low perceived impact	Size of the scheme (r = 0.237, p = 0.017)
Strength of Relationships	Based on perceptions and thematic interpretation; shows dynamic response to changing environment.	Shows strong, significant statistical relationships (e.g., scheme age and asset allocation: r = 0.599).
Conclusion	During COVID-19, schemes shifted allocations toward safer, more liquid investments, reduced equity exposure, and pursued diversification to manage risk. These decisions were tactically driven by external conditions such as inflation, market volatility, and reduced contributions.	Asset allocation is also systematically influenced by internal organizational factors. Strong correlations were found between scheme type, size, age, and market position with asset allocation patterns, suggesting that structural attributes determine a scheme's risk capacity and investment flexibility.

CHAPTER FIVE: DISCUSSIONS, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion, conclusion and recommendations. In the discussion, the researcher interprets and explains the study's results, drawing connections to the research questions or hypotheses. The conclusion section summarizes the key findings of the study and provides a final assessment of the research hypotheses. The recommendation section offers suggestions for practical and managerial applications of the study's findings. The chapter also presents the limitations of the study and suggestions for further research.

5.2 Summary of Main Findings

It was established that asset allocation had variations over the years from the year 2018 to the year 2023. Before the COVID-19 pandemic, pension schemes adopted strategic, long-term asset allocation focused on growth and diversification. Investments in equities, real estate and government securities dominated portfolios supported by a relatively stable economic environment. During the COVID-19 pandemic, tactical adjustments became essential to navigate heightened uncertainty. Allocations shifted toward low-risk assets, such as government bonds, to preserve capital amidst falling stock market performance. After the pandemic, a blend of strategic and tactical adjustments emerged as schemes adapted to the recovery phase. There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya before COVID-19 in the years between 2018 and 2019. There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya during COVID-19 in the years between 2020 and 2021. There existed a positive relationship between organization factors and changes at umbrella pension schemes in Kenya after COVID-19 in the years between 2022 and 2023.

5.3 Discussion of Findings

5.3.1 Asset allocation Changes at Umbrella Pension Schemes

The study established that the COVID-19 pandemic significantly influenced the selection of investment instruments within pension schemes, aligning with literature that highlights the pandemic's profound impact on global financial markets and investment decisions (Baker et al., 2020). The pandemic caused a shift in risk tolerance, as many pension schemes adopted more conservative asset allocation strategies to mitigate heightened uncertainties, a trend consistent with findings in recent financial studies (Giglio et al.,

2021). Additionally, it was revealed that the COVID-19 pandemic affected the strategic planning process for asset allocation within pension schemes. This finding echoes existing literature, which points to the pandemic's disruption of traditional strategic planning processes in favor of more flexible, adaptive approaches (Cheema-Fox et al., 2020). Pension schemes had to reassess their long-term strategies in light of the volatile market conditions.

Moreover, the pandemic impacted the diversification of assets within most pension schemes, with many schemes seeking to spread risk across a broader range of asset classes. This aligns with research that underscores the importance of diversification as a risk management strategy during periods of economic instability (Barro & Ursúa, 2020). The findings suggest that pension schemes were forced to reevaluate their diversification practices to better withstand market shocks triggered by the pandemic.

The research findings revealed several key factors influencing asset allocation, which align with the literature on financial markets and asset management. Most respondents agreed that fluctuations in financial markets were the most significant factor, consistent with previous studies that highlight market volatility as a critical determinant in asset allocation decisions (Merton, 2019). The literature emphasizes that financial market disruptions and liquidity shortages, particularly in uncertain times, often lead investors to adjust their asset distribution to mitigate risk (Brunnermeier & Pedersen, 2020). The responses in the study reflect these widely recognized concerns. Further, uncertainty surrounding economic recovery was perceived as a significant influence on asset allocation. This finding supports the work of scholars like Reinhart and Rogoff (2021), who argue that economic recovery, especially in the aftermath of global crises like the COVID-19 pandemic, creates substantial ambiguity in investment decision-making. As economic recovery forecasts remain unpredictable, investors tend to adopt more cautious asset allocation strategies, a trend mirrored in the study.

Increased default risk, particularly in corporate bonds and fixed-income securities, was another factor highlighted in the study. Literature suggests that during periods of economic instability, the risk of default rises, impacting investor confidence in these asset classes (Acharya et al., 2020). The respondents' mixed views on the significance of default risk reflect the divergent perspectives in the financial literature regarding how best to manage such risks during volatile periods. Finally, the study found that changes in regulatory

requirements and government policies were seen as the least likely factors to influence asset allocation. This outcome contrasts slightly with literature that argues that regulatory shifts, especially those introduced during crises, can have long-term impacts on asset management practices (Goodhart et al., 2020). However, the lower perceived significance of regulatory changes in this study may suggest that respondents viewed the current policies as less disruptive or already factored into their decision-making processes.

The findings of the study, showing how umbrella pension schemes in Kenya responded to the COVID-19 pandemic by reducing risk exposure and prioritizing capital preservation, are fully consistent with the Risk-Return Trade-Off theory. The theory provides a clear framework to understand why these pension funds shifted to more conservative asset allocations, emphasizing the trade-off between risk and return in an environment of heightened uncertainty and volatility (Bonomo et al., 2015).

5.3.2 Organizational Factors Affecting Asset Allocation Changes

The study established that the aggregated size of the scheme exhibited a dynamic growth pattern from 2018 to 2023, influenced by various external and internal factors. In 2019, the scheme's aggregated size grew from 2018. This growth was likely driven by favorable market dynamics and stable economic conditions, aligning with literature that suggests stable environments foster growth (Kharas, 2021). However, the year 2020 marked a decline, coinciding with the global COVID-19 pandemic, which disrupted economic activities and organizational operations, as observed in numerous studies (Baldwin & Mauro, 2020).

The decline in 2020 can be attributed to the global economic challenges posed by COVID-19. The literature underscores that the pandemic-induced lockdowns, social distancing measures, and supply chain disruptions led to reduced consumer spending and liquidity challenges for many organizations (Nicola et al., 2020). This situation is mirrored in the scheme's performance, which saw a significant downturn during the height of the pandemic.

In the post-pandemic period, beginning in 2021, the study uncovered that the scheme experienced a strong recovery, with the aggregated size rising in 2021, 2022 and 2023. This recovery reflects the findings of recent studies, which highlight that organizational restructuring, digital transformation, and resource optimization strategies played a key role

in post-pandemic recovery (Van Lancker & Parolin, 2020). The reopening of economies and the relaxation of restrictions further contributed to this positive trend, allowing organizations to regain market presence and improve performance, reinforcing the adaptability and resilience of businesses during challenging times.

The findings that organizational factors like internal governance, risk management frameworks, and decision-making processes were pivotal in driving effective asset allocation changes during the COVID-19 pandemic can be directly linked to the Arbitrage Portfolio Theory. Strong governance allowed pension schemes to identify mispriced assets, quickly exploit arbitrage opportunities, and make timely adjustments to their portfolios. Effective leadership and the ability to adapt swiftly to market changes enabled these schemes to capitalize on market inefficiencies during the volatile economic period, aligning with APT's principles of exploiting arbitrage for better portfolio performance (Karatzas & Kardaras, 2021).

5.3.3 Management Perspectives on Asset Allocation Changes

Results revealed that managers of pension schemes had effectively adjusted to asset allocations in response to the COVID-19 pandemic, it was also revealed that managers were adequately considering the long-term implications of their asset allocation decisions. Results showed that managers have integrated risk management strategies into their asset allocation decisions have also the study established that management at umbrella pension schemes had effectively navigated pandemic challenges while optimizing asset allocations. The findings supported De Longis and Ellis (2023) findings that the decision decides which variations based on current market values should be made from the strategic asset allocation estimates.

To effectively adapt asset allocation in response to future pandemics or similar crises, pension schemes should Expand diversification across a broader range of asset classes and geographic regions to mitigate risk and reduce vulnerability to market shocks, Maintain higher levels of liquidity within portfolios to ensure adequate cash reserves for navigating unexpected disruptions and capitalizing on market opportunities, Build and continually refine comprehensive risk management frameworks to better anticipate and address economic volatility and market instability Regularly conduct scenario planning and stress tests to assess the potential impact of various crisis scenarios on asset allocation and investment performance and Create and implement flexible investment policies that allow

for swift adjustments in asset allocation in response to evolving market conditions and emerging risks. Strategic8allocation choices are made over several years or decades, reflecting a buy-and-hold investing attitude (Gavrikova et al., 2020).

The study's findings that management's adaptability, collaboration, and strategic flexibility were key in navigating the COVID-19 crisis aligns well with the principles of Modern Portfolio Theory. The focus on continuous monitoring of market conditions, flexible strategic planning, and diversification reflects MPT's emphasis on dynamic asset allocation and diversification to manage risk and enhance returns. By quickly reassessing asset allocation strategies in response to real-time data, management teams were able to optimize their portfolios, maintaining the risk-return balance and financial stability of pension schemes during a period of high market uncertainty (Kumar, 2018).

5.4 Conclusions

The study concluded that the COVID-19 pandemic significantly influenced asset allocation changes within umbrella pension schemes in Kenya. The findings indicated that pension schemes responded to the heightened uncertainty and market volatility caused by the pandemic by adjusting their investment strategies, favoring more conservative and liquid assets. The pandemic prompted a reassessment of risk tolerance, leading to more cautious asset allocation decisions aimed at preserving capital and managing potential losses in an unpredictable market environment. This aligns with broader global trends observed in pension fund management during crises. This illustrates how pension funds worldwide navigated the challenges of the pandemic, prioritizing stability and capital preservation over potentially higher but riskier, returns thus supporting Risk-Return Trade-Off theory.

In terms of organizational factors affecting asset allocation changes, the study uncovered that internal governance structures, risk management frameworks and decision-making processes within pension schemes played critical roles. Strong leadership, effective communication, and adaptability within the organizations allowed for more agile responses to the challenges posed by the pandemic. Pension schemes with well-established governance frameworks were better positioned to make swift and informed asset allocation changes in response to the evolving economic landscape. The conclusions support Arbitrage Portfolio theory which suggests that asset prices may sometimes be mispriced

due to market inefficiencies, and investors including pension funds can exploit these inefficiencies by reallocating portfolios to underpriced or misvalued assets.

Finally, management perspectives on these organizational factors revealed that adaptability, collaboration, and a forward-looking approach were key to navigating the uncertainties of the COVID-19 crisis. The study found that management teams placed a higher emphasis on continuous monitoring of market conditions, the need for flexible strategic planning, and the importance of diversifying investment portfolios to mitigate risks. Management's ability to quickly reassess and realign asset allocation strategies based on real-time market data was critical in maintaining the financial stability of pension schemes during the pandemic. This highlights how Modern Portfolio theory offers a framework for understanding how management's decisions can help mitigate risk and achieve optimal outcomes, even during a crisis.

5.5 Limitations of the Study and Suggestions for Further Research

The study was limited to umbrella pension schemes in Kenya, which may affect the generalizability of the findings to other regions or types of pension schemes. Future research could explore the impact of COVID-19 on individual pension schemes and compare asset allocation strategies across different countries or regions. Additionally, the study focused on organizational factors but did not examine the role of external financial advisors in asset allocation decisions. Future research could investigate how external advisory services influence asset management during economic crises.

5.6 Recommendations

5.6.1 Policy Recommendations

To ensure the stability of pension schemes during crises such as the COVID-19 pandemic, the study recommends that governments should develop policies that promote the diversification of pension fund investments. These policies should encourage pension schemes to adopt flexible investment strategies that can quickly adapt to changing market conditions.

Governments should also introduce regulatory frameworks that mandate stress testing of pension schemes' asset portfolios to ensure they can withstand economic shocks.

Additionally, governments should provide incentives for pension schemes to invest in sustainable and resilient asset classes such as green bonds or infrastructure projects to reduce vulnerability to future crises.

5.6.2 Managerial Recommendations

The study recommends that pension scheme managers implement robust risk management frameworks that allow for real-time monitoring and adjustment of asset allocation strategies during periods of market volatility.

The study recommends that, to improve decision-making, pension scheme managers enhance communication channels within their organizations, ensuring that all stakeholders are informed of market developments and potential risks.

The study recommends further training for pension fund managers on adaptive strategies, enabling them to respond effectively to unexpected economic disruptions such as pandemics.

5.6.3 Theoretical Contributions

The study contributes to Modern Portfolio Theory (MPT) by demonstrating how external shocks, like the COVID-19 pandemic, influence the risk-return trade-offs in asset allocation decisions. Traditional MPT focuses on optimizing portfolios based on stable market conditions, but the study reveals that crises require a more dynamic approach. The pandemic caused significant market volatility and uncertainty, forcing pension schemes to recalibrate their risk tolerance and shift toward more conservative investments. This shift highlights the limitations of standard MPT assumptions during periods of economic instability, where expected returns become unpredictable, and risk levels rise dramatically.

Additionally, the study expands MPT by emphasizing the role of organizational factors, such as governance structures and risk management, in asset allocation during crises. Pension schemes with strong governance and adaptive decision-making processes were better equipped to adjust their portfolios in response to market disruptions. The findings also underscore the need for flexible, strategic diversification beyond traditional asset classes, allowing pension schemes to better navigate economic uncertainty. Overall, the study offers a more comprehensive understanding of portfolio optimization during external

shocks, suggesting that pension schemes must adopt proactive, real-time strategies to enhance resilience in volatile market conditions.

5.7 Implication of the Study

The study focused on the asset allocation changes within pension schemes in Kenya during the COVID-19 pandemic, providing valuable insights into how crises affect investment strategies and risk tolerance. The findings have practical implications for pension fund managers, policymakers, and stakeholders by demonstrating the need for flexible, adaptive investment approaches in the face of unpredictable market conditions. The study also contributes to the body of knowledge on financial management during crises, particularly within the context of emerging economies like Kenya

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APPENDICES

Appendix I: List of Registered Umbrella Retirement Benefits Schemes

1. ABSA Umbrella Retirement Benefits Fund
2. Amana Umbrella Pension Scheme
3. APA Life Umbrella Retirement Fund
4. British American Insurance Umbrella Retirement Fund
5. CIC Umbrella Retirement Benefits Scheme
6. CICAM Umbrella Retirement Fund
7. Co-optrust Investment Retirement Benefits Scheme
8. County Pension Fund
9. County State Officers Umbrella Pension Fund
10. Cytonn Umbrella Retirement Benefits Scheme
11. Enwealth Umbrella Fund
12. Equity Umbrella Retirement Fund (Provident Section)
13. Equity Umbrella Retirement Fund (Pension Section)
14. Fusion Umbrella Retirement Benefits Scheme
15. Genafrica Kivuli Umbrella Provident Fund
16. ICEALION Umbrella Retirement Benefits Scheme
17. ICEALION Guaranteed Umbrella Fund
18. Jubilee Financial Services Limited Umbrella Fund
19. Kenindia Umbrella Provident Fund
20. Kenya Orient Umbrella Pension Fund
21. Kivuli Umbrella Fund
22. KUSSCO Mutual Umbrella Retirement Benefits Scheme
23. KUZA Umbrella Retirement Benefits Fund
24. Liberty Life Boresha Maisha Umbrella Fund
25. Liberty Life Umbrella Pension Fund
26. Madison Umbrella Retirement Benefits Scheme
27. Minet Kenya Umbrella Retirement Fund
28. Mwavuli Pension Fund
29. NCBA Umbrella Retirement Benefits Scheme
30. Ngao Umbrella Pension Scheme
31. NTISL Umbrella Retirement Benefits Scheme

32. Octagon Umbrella Retirement Benefits Scheme
33. Old Mutual Umbrella Retirement Benefits Scheme
34. Sanlam Umbrella Retirement Fund
35. Pioneer Umbrella Retirement Fund
36. Prudential Umbrella Retirement Benefits Scheme
37. Suluhu Umbrella Scheme
38. Takaful Umbrella Fund
39. Jubilee Insurance Umbrella Scheme
40. Kenyan Alliance Insurance Company Limited Umbrella Fund
41. Monarch Umbrella Retirement Fund
42. UAP Umbrella Retirement Benefits Scheme
43. WASPA (UMBRELLA)Pension Fund
44. Zamara Fanaka Retirement Fund (Provident Section)
45. Zamara Fanaka Retirement Fund (Pension Sections)

Appendix II: Letter of Introduction

Dear Respondent:

I am currently enrolled as a master's student at Strathmore University, and as part of my academic program, I am conducting a research study on the **ORGANIZATION FACTORS AFFECTING ASSET ALLOCATION BY UMBRELLA PENSION SCHEMES IN KENYA DURING COVID-19**. Your participation in this study by completing the questionnaire is greatly appreciated. Rest assured that all information provided will be used solely for academic purposes and will be treated with strict confidentiality. The findings of the survey will be presented in aggregate form, ensuring that individual or company identities are not disclosed.

Thank you for your participation.

Appendix III: Questionnaire

Part A: Summary of Respondent's Details

1. Please indicate your position in your organization……
2. Please indicate the duration of service in the pension scheme……
3. Please indicate your experience of service in the pension industry…….

Part A: Organizational Information

4. Please indicate the size of your scheme in terms of total assets in Ksh in the following years?

   2018……..

   2019……..

   2020……..

   2021……..

   2022……..

   2023……..
5. Please indicate the number of years your pension scheme has been in existence ……
6. Please indicate the market share of the scheme in percentage (%) in the following years?

   2018……..

   2019……..

   2020……..

   2021……..

   2022……..

   2023……..
7. Please indicate the type of your pension scheme by a tick?

   Defined benefit [ ]

   Defined contribution [ ]
8. What other organizational factors influence tactical and strategic changes in asset allocation at your pension scheme and why? Please explain

……

……

…….

Part C: Management Perspectives About Effect of Covid on Asset Allocation

9. Did COVID-19 pandemic affect the asset allocation s of your pension scheme?

Yes [ ]

No [ ]

If yes, please explain how

……

……

……..

10. What factors influenced tactical and strategic changers in pension schemes asset allocation before, during and after COVID-19 pandemic?

……

……

…….

11. Did you face challenges in asset allocation during the COVID-19 pandemic?

Yes [ ]

No [ ]

If yes, please explain the challenges

……

……

…….

12. Please indicate the level of likelihood of effect of the following COVID-19 factors on assets allocation of your pension schemes?

Statement	**Low**	**Moderate**	**High**	**Very high**

Fluctuations in financial markets				
Uncertainty surrounding economic recovery				
Disruptions in financial markets and reduced liquidity in certain asset classes				
Increased default risk associated with corporate bonds and other fixed-income securities				
Changes in regulatory requirements and government policies in response to the pandemic				

13. Please indicate the extent to which COVID-19 affected assets allocation of your pension schemes?

Where; Not at all (1); Slight extent (2), Moderate extent (3); Great extent (4); Very great extent (5).

Statement	**1**	**2**	**3**	**4**	**5**
COVID-19 pandemic impacted the diversification of assets within our pension scheme					
COVID-19 pandemic affected the risk tolerance of our pension schemes in its asset allocation decisions					
COVID-19 pandemic influenced the selection of investment instruments within our pension schemes					
COVID-19 pandemic affected the strategic planning process for asset allocation in our pension schemes					

14. Please indicate the level of agreement to which management have adjusted to COVID-19 in terms of asset allocation?

Where; Disagree (1); Not sure (2), Agree (3)

Statement	**1**	**2**	**3**
Managers have effectively adjusted to asset allocations in response to the COVID-19 pandemic			
Managers are adequately considering the long-term implications of their asset allocation decisions			

Managers have navigated the challenges posed by the COVID-19 pandemic while optimizing asset allocations			
Managers have integrating risk management strategies into their asset allocation decisions			

15. Looking ahead, what strategies is your pension scheme considering to adapt in regard to asset allocation when faced with other pandemics like COVID-19 pandemic?

    ……

    ……

    ……

Appendix IV: Government Securities Allocation Account

	Bank	2018	2019	2020	2021	2022	2023
		Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000
1.	Zamara Fanaka Retirement Fund	2,534,618	2,988,873	4,628,593	5,966,755	7,697,135	9,381,152
2.	British American Umbrella Pension Fund	2,275,158	2,699,700	4,154,780	5,492,855	7,012,508	8,004,733
3.	Zamara Fanaka Retirement Fund	1,891,174	2,244,065	3,453,568	4,565,805	5,828,991	6,653,756
4.	Ngao Umbrella Pension Scheme	624,333	745,507	1,140,126	2,104,433	3,664,732	4,052,884
5.	British American Insurance Company	550,533	653,262	1,005,356	1,329,137	1,696,853	1,936,950
6.	Zamara Vuna Pension Plan	860,251	1,020,770	1,570,948	2,076,877	2,651,470	3,026,634
7.	Amana Umbrella Pension Scheme	929,426	1,102,861	1,697,271	2,243,889	2,864,692	3,270,020
8.	Aon Minet Umbrella Retirement Fund	797,606	946,437	1,456,548	1,925,633	2,458,387	2,806,224
9.	Jubilee Insurance Umbrella Pension fund	25,648	30,435	46,838	61,929	79,058	90,247
10.	ICEA Lion Umbrella Retirement Scheme	347,469	412,309	634,531	838,888	1,070,969	1,222,510
11.	Old Mutual Umbrella Retirement fund	221,972	263,393	405,355	535,900	684,168	780,971
12.	County Pension Fund	183,945	218,270	335,912	444,098	566,964	647,178
13.	UAP Umbrella Retirement Benefits Scheme	644,396	764,643	1,176,764	1,555,753	1,986,160	2,267,190
14.	Madison Umbrella Retirement Scheme	135,950	161,317	248,266	328,219	419,020	478,311
15.	Kenindia Umbrella Provident Fund	16,571	19,662	30,262	40,007	51,075	58,307
16.	KENINDIA Umbrella Pension Scheme	325,947	386,766	595,228	786,923	620,221	1,146,779
17.	Takaful Umbrella Fund	17,466	20,725	31,895	42,171	53,834	61,453
18.	Stanlib Pension Umbrella Fund	121,164	143,775	221,264	292,524	373,451	426,295
19.	Liberty Life Boresha Maisha Umbrella Provident Fund	127,146	150,874	232,187	306,968	391,888	447,338
20.	Pioneer Umbrella Retirement Fund	2,820	3,344	5,149	6,806	8,685	9,920
21.	APA Life Umbrella Retirement Fund	43,527	51,651	79,486	105,092	134,163	153,149
22.	Octagon Umbrella Retirement Scheme	28,126	33,375	51,362	67,903	86,687	98,954
23.	The Kenyan Alliance Insurance Company Limited Umbrella Scheme	359,984	427,159	657,385	869,101	1,109,545	1,266,539
24.	Fusion Umbrella Retirement Benefits Scheme- Fubrs	15,677	18,605	28,628	37,851	48,327	55,162
25.	Cic Umbrella Retirement Scheme	20,355	24,150	37,172	49,139	62,734	71,610
26.	Kivuli Umbrella Fund	13,958	16,566	25,489	33,701	43,026	49,117
27.	Kenya Orient Umbrella Pension Scheme	7,976	9,467	14,566	19,257	24,589	28,064
28.	Enwealth Umbrella Fund	2,337	2,773	4,268	5,644	4,030	8,224
29.	The Monarch Umbrella Retirement Fund	27,025	32,069	49,352	65,247	83,293	95,078
30.	Suluhu Umbrella Scheme	155,271	184,242	283,549	374,871	478,575	546,292
31.	NTISL Umbrella Retirement Scheme	24,824	29,458	45,332	59,934	76,515	87,338
32.	Cicam Umbrella Retirement Fund	12,309	14,608	22,478	29,721	37,940	43,309
33.	Icea Lion Guaranteed Umbrella Fund	152,382	180,817	278,272	367,895	469,674	536,135
34.	Cytonn Umbrella Retirement Scheme	182,502	216,554	333,277	440,610	562,514	642,100
	Total	**13,679,846**	**16,218,483**	**24,981,455**	**33,471,536**	**43,401,873**	**50,449,923**

Appendix V: Quoted Equity Allocation

	Bank	2018	2019	2020	2021	2022	2023
		Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000
1.	Zamara Fanaka Retirement Fund	617,971	727,188	1,047,941	1,623,318	1,862,584	1,524,124
2.	British American Umbrella Pension Fund	524,961	584,219	890,217	1,049,097	1,295,695	1,248,027
3.	Zamara Fanaka Retirement Fund	476,762	741,807	808,483	1,203,531	1,427,987	1,143,167
4.	Ngao Umbrella Pension Scheme	259,499	359,735	440,053	698,185	1,094,492	953,232
5.	British American Insurance Company	390,140	593,162	661,591	880,006	911,688	859,365
6.	Zamara Vuna Pension Plan	366,347	360,299	621,243	843,727	933,142	727,558
7.	Amana Umbrella Pension Scheme	280,010	370,466	474,835	627,458	733,048	656,752
8.	Aon Minet Umbrella Retirement Fund	188,347	281,077	319,394	45,857	691,759	539,129
9.	Jubilee Insurance Umbrella Pension Scheme	237,139	461,352	402,135	606,072	422,309	568,465
10.	ICEA Lion Umbrella Retirement Benefits Scheme	124,788	162,546	211,612	84,682	374,649	282,236
11.	Old Mutual Umbrella Retirement Benefits Scheme	285,079	449,630	483,430	730,220	900,074	622,259
12.	County Pension Fund	123,160	148,529	208,852	76,845	243,312	163,109
13.	UAP Umbrella Retirement Benefits Scheme	144,373	144,524	244,825	156,678	264,660	56,381
14.	Madison Umbrella Retirement Benefits Scheme	107,772	162,215	182,758	50,831	300,099	288,595
15.	Kenindia Umbrella Provident Fund	42,704	31,883	72,416	59,429	180,183	94,298
16.	KENINDIA Umbrella Pension Scheme	91,986	144,116	155,987	101,419	147,510	185,269
17.	Takaful Umbrella Fund	55,330	86,570	93,828	52,492	92,486	71,502
18.	Stanlib Pension Umbrella Fund	14,816	9,196	25,125	28,124	72,295	19,030
19.	Liberty Life Boresha Maisha Umbrella Provident Fund	100,047	322,408	169,657	55,621	117,458	152,168
20.	Pioneer Umbrella Retirement Fund	19,223	27,295	32,598	42,950	24,317	28,353
21.	APA Life Umbrella Retirement Fund	15,302	15,572	25,948	23,895	72,150	20,233
22.	Octagon Umbrella Retirement Benefits Scheme	76,775	90,186	130,193	47,621	59,486	202,372
23.	The Kenyan Alliance Insurance Scheme	21,236	163,245	36,012	58,189	177,233	36,322
24.	Fusion Umbrella Retirement Benefits Scheme- Fubrs	41,370	45,258	70,155	61,672	49,713	58,823
25.	Cic Umbrella Retirement Benefits Scheme	24,024	56,262	40,740	41,548	36,836	70,187
26.	Kivuli Umbrella Fund	29,905	24,787	50,712	44,396	66,136	45,176
27.	Kenya Orient Umbrella Pension Scheme	24,079	38,240	40,832	40,005	63,380	54,264
28.	Enwealth Umbrella Fund	11,960	117,443	20,282	46,241	134,768	15,235
29.	The Monarch Umbrella Retirement Fund	76,530	41,467	129,778	47,422	208,528	64,758
30.	Suluhu Umbrella Scheme	22,370	44,481	37,934	49,304	61,327	23,665
31.	NTISL Umbrella Retirement Benefits Scheme	16,730	34,430	28,370	88,549	33,637	50,801
32.	Cicam Umbrella Retirement Fund	27,484	39,582	46,606	60,071	55,775	36,723
33.	Icea Lion Guaranteed Umbrella Fund	36,814	51,829	62,429	49,186	35,767	69,037
34.	Cytonn Umbrella Retirement Benefits Scheme	26,346	44,014	44,677	34,478	71,495	65,212
	Total	**4,901,379**	**6,975,013**	**8,311,645**	**9,709,117**	**13,215,976**	**10,995,826**

Appendix VI: Immovable Property Allocation

	Bank	2018	2019	2020	2021	2022	2023
		Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000
1.	Zamara Fanaka Retirement Fund	315,180	464,655	386,014	524,869	729,222	1,185,297
2.	British American Umbrella Pension Fund	501,099	648,239	613,716	643,495	682,591	888,616
3.	Zamara Fanaka Retirement Fund	464,656	593,577	569,083	604,802	641,547	835,192
4.	Ngao Umbrella Pension Scheme	235,228	278,362	288,093	508,046	602,837	753,109
5.	British American Insurance Company	325,147	339,296	398,220	427,514	453,488	590,368
6.	Zamara Vuna Pension Plan	280,190	355,807	343,160	317,650	336,949	438,653
7.	Amana Umbrella Pension Scheme	243,098	287,678	297,732	326,740	346,592	451,206
8.	Aon Minet Umbrella Retirement Fund	159,120	188,299	194,880	227,065	240,861	313,561
9.	Jubilee Insurance Umbrella Pension Scheme	227,843	269,624	279,048	303,996	322,465	419,791
10.	ICEA Lion Umbrella Retirement Benefits Scheme	126,644	149,866	155,106	132,321	140,364	182,729
11.	Old Mutual Umbrella Retirement Benefits Scheme	268,479	317,713	328,817	429,395	455,483	592,963
12.	County Pension Fund	119,323	141,204	146,140	154,261	163,631	213,021
13.	UAP Umbrella Retirement Benefits Scheme	9,330	11,040	11,427	15,696	16,648	21,677
14.	Madison Umbrella Retirement Benefits Scheme	90,910	184,260	111,341	116,912	124,014	161,449
15.	Kenindia Umbrella Provident Fund	34,653	41,008	42,441	46,911	49,759	64,785
16.	KENINDIA Umbrella Pension Scheme	70,478	83,401	86,317	96,712	102,588	133,551
17.	Takaful Umbrella Fund	39,261	46,461	48,085	41,475	43,997	57,275
18.	Stanlib Pension Umbrella Fund	12,194	14,430	14,935	16,934	17,963	23,385
19.	Liberty Life Boresha Maisha Umbrella Provident Fund	89,726	106,180	109,891	130,839	138,787	180,679
20.	Pioneer Umbrella Retirement Fund	20,510	24,270	25,119	25,964	27,542	35,853
21.	APA Life Umbrella Retirement Fund	14,166	16,765	17,350	17,971	19,063	24,816
22.	Octagon Umbrella Retirement Benefits Scheme	67,504	79,883	82,675	80,419	85,305	111,050
23.	The Kenyan Alliance Insurance Scheme	21,926	25,947	26,854	34,903	37,022	48,196
24.	Fusion Umbrella Retirement Benefits Scheme-Fubrs	33,942	40,166	41,570	45,062	47,797	62,225
25.	Cic Umbrella Retirement Benefits Scheme	23,519	27,834	28,805	21,556	22,866	29,766
26.	Kivuli Umbrella Fund	28,669	33,923	35,112	36,611	38,835	50,560
27.	Kenya Orient Umbrella Pension Scheme	22,717	26,883	27,823	38,531	40,875	53,209
28.	Enwealth Umbrella Fund	8,757	10,364	10,725	12,402	13,154	17,124
29.	The Monarch Umbrella Retirement Fund	60,472	71,560	74,063	81,836	86,804	113,008
30.	Suluhu Umbrella Scheme	41,250	47,353	50,520	65,047	85,830	109,548
31.	NTISL Umbrella Retirement Benefits Scheme	16,139	19,099	19,766	19,631	20,821	27,109
32.	Cicam Umbrella Retirement Fund	28,018	33,156	34,315	42,853	45,455	59,179
33.	Icea Lion Guaranteed Umbrella Fund	29,089	34,425	35,627	37,395	39,669	51,640
34.	Cytonn Umbrella Retirement Benefits Scheme	25,191	29,811	30,853	33,313	35,337	45,999
	Total	**4,054,431**	**5,042,537**	**4,965,623**	**5,659,126**	**6,256,164**	**8,346,591**

Appendix VII: Guaranteed Fund Allocation

	Bank	2018	2019	2020	2021	2022	2023
		Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000	Ksh 000
1.	Zamara Fanaka Retirement Fund	3,245,587	3,776,016	4,461,901	5,320,282	6,661,982	6,882,779
2.	British American Umbrella Pension Fund	2,442,849	2,663,270	3,358,329	3,485,536	6,274,600	6,334,759
3.	Zamara Fanaka Retirement Fund	2,164,119	2,479,820	2,975,143	4,683,998	4,103,016	3,982,781
4.	Ngao Umbrella Pension Scheme	1,455,028	1,729,063	2,000,313	1,989,420	4,151,208	4,390,779
5.	British American Insurance Company	1,223,781	1,976,081	1,682,404	2,651,466	3,255,356	3,381,972
6.	Zamara Vuna Pension Plan	1,800,683	1,709,777	2,475,506	2,286,210	2,544,410	2,704,148
7.	Amana Umbrella Pension Scheme	2,237,638	1,706,360	3,076,214	3,448,991	2,337,060	2,235,630
8.	Aon Minet Umbrella Retirement Fund	1,382,611	1,391,803	1,900,757	2,237,894	2,423,594	2,765,716
9.	Jubilee Insurance Umbrella Pension Scheme	1,408,865	1,410,971	1,936,850	1,166,794	1,369,586	990,781
10.	ICEA Lion Umbrella Retirement Benefits Scheme	464,817	1,184,659	639,012	746,844	994,193	1,373,044
11.	Old Mutual Umbrella Retirement Benefits Scheme	689,794	520,124	948,301	2,190,208	2,478,095	2,545,703
12.	County Pension Fund	301,037	747,124	413,853	527,079	659,558	861,976
13.	UAP Umbrella Retirement Benefits Scheme	523,612	380,741	719,841	815,246	847,980	910,273
14.	Madison Umbrella Retirement Benefits Scheme	379,560	598,446	521,803	635,555	960,345	994,863
15.	Kenindia Umbrella Provident Fund	349,055	429,077	479,866	555,569	1,112,662	233,639
16.	KENINDIA Umbrella Pension Scheme	73,922	699,320	101,625	264,160	260,438	1,011,628
17.	Takaful Umbrella Fund	173,626	196,398	238,694	219,358	314,415	270,407
18.	Stanlib Pension Umbrella Fund	139,981	406,375	192,440	265,823	286,079	245,593
19.	Liberty Life Boresha Maisha Umbrella Provident Fund	119,482	130,705	164,259	190,910	784,998	369,041
20.	Pioneer Umbrella Retirement Fund	103,681	98,305	142,537	889,879	187,548	91,846
21.	APA Life Umbrella Retirement Fund	78,872	108,141	108,430	153,972	216,803	301,754
22.	Octagon Umbrella Retirement Benefits Scheme	362,813	153,801	498,780	229,012	330,064	218,638
23.	The Kenyan Alliance Insurance Scheme	169,056	202,402	232,411	77,326	240,621	346,133
24.	Fusion Umbrella Retirement Benefits Scheme- Fubrs	90,310	298,091	124,155	235,024	329,145	110,949
25.	Cic Umbrella Retirement Scheme	138,047	93,064	189,781	79,824	622,286	97,876
26.	Kivuli Umbrella Fund	77,438	165,276	106,458	118,270	196,599	261,932
27.	Kenya Orient Umbrella Pension Scheme	50,266	60,051	69,104	131,494	94,514	94,482
28.	Enwealth Umbrella Fund	127,318	330,785	175,032	91,098	84,932	717,257
29.	The Monarch Umbrella Retirement Fund	59,654	63,863	82,010	120,824	134,665	390,907
30.	Suluhu Umbrella Scheme	40,750	93,119	56,022	162,377	275,928	119,693
31.	NTISL Umbrella Retirement Scheme	274,756	32,559	377,724	662,474	100,308	579,318
32.	Cicam Umbrella Retirement Fund	44,849	62,165	61,656	214,763	102,206	182,260
33.	Icea Lion Guaranteed Umbrella Fund	41,647	41,643	57,254	90,404	103,694	125,000
34.	Cytonn Umbrella Retirement Scheme	33,020	108,596	45,395	89,302	131,271	103,466
	Total	**22,268,522**	**26,047,992**	**30,613,859**	**37,027,387**	**44,970,158**	**46,227,020**

Appendix VIII: NACOSTI Research License

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 756731

Date of Issue: 05/June/2024

RESEARCH LICENSE

This is to Certify that Miss. Leah Wanyingi of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev. 2014) in Nairobi on the topic: ORGANIZATION FACTORS AFFECTING ASSET ALLOCATION BY UMBRELLA PENSION SCHEMES IN KENYA DURING COVID-19. for the period ending : 05/June/2025.

License No: NACOSTI/P/24/36601

756731

Applicant Identification Number

Director General

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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See overleaf for conditions

Appendix IX: Ethics Review Letter

Strathmore UNIVERSITY

29th May 2024

Ms Wanyingi Leah,
leah.wanyingi@strathmore.edu

Dear Ms Wanyingi,

RE: Organization Factors Affecting Asset Allocation by Umbrella Pension Schemes in Kenya During Covid-19

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** proposal. Your application reference number is **SU-ISERC2245/24.** The approval period is from **29th May 2024 to 28th May 2025.**
This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

Mr Ambrose Rachier,
Chairperson; SU-ISERC

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