

INVESTMENT MANAGEMENT STRATEGIES AND NET INVESTMENT RETURNS OF UMBRELLA RETIREMENT BENEFIT SCHEMES IN KENYA

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ABSTRACT

The ability Umbrella retirement benefit schemes in Kenya to remain effective is tied to the consistency of net investment returns, yet recent evidence points to a worrying decline that threatens sustainability. Between 2015 and 2019, net returns were relatively strong, averaging between 10 and 13 percent, but this performance weakened during the pandemic and fell to 0.1 percent in 2023 before a short-lived recovery to 13.2 percent in 2024. The declining trend demonstrates persistent weaknesses in investment management and raises concerns about the adequacy of retirement income for contributors. The overall objective of the study was to examine the effect of investment management strategies on the net investment returns of umbrella retirement benefit schemes in Kenya. Specifically, the study sought to determine the effect of asset allocation strategies, portfolio diversification strategies, investment expense management strategies, and liquidity management strategies on net investment returns. The research was anchored on Modern Portfolio Theory and Liquidity Preference Theory. A descriptive and explanatory research design was adopted, and a census approach was applied to all fifty-four umbrella retirement benefit schemes registered by the RBA. The research utilized secondary data obtained from audited financial statements and regulatory reports covering the period 2015

to 2024, yielding 540 scheme year observations. Data were analyzed using Stata, applying descriptive statistics. The regression results indicated that asset allocation strategies had a positive and statistically significant effect on net investment returns, while portfolio diversification strategies also had a favorable and statistically significant effect. Investment expense management strategies had a negative and statistically significant effect on net investment returns while liquidity management strategies exerted a positive and statistically significant effect. The study concluded that investment management strategies significantly influenced the net investment returns of umbrella retirement benefit schemes in Kenya and recommended that scheme managers strengthen asset allocation and diversification practices, enhance cost control mechanisms, and maintain prudent liquidity management, while regulators reinforce oversight frameworks focusing on efficiency and governance. Ethical principles relating to responsible use of secondary data, confidentiality, and academic integrity were fully adhered to in the research.

Key words: Asset Allocation, Investment Expense, Liquidity Management, Portfolio Diversification.

INTRODUCTION

The investment management strategies may be seen as the practical means according to which pension funds and other institutional investors make their decisions regarding the ways and the locations to invest their funds. Such strategies include portfolio planning, tracking risk exposures and repositioning of holdings to long-term financial obligations. As noted by OECD (2023), sound strategies are not only able to cushion the savings of the members but also contribute to the overall financial stability. Similarly, the World Bank (2022) considers them as being included in the arrangements of governance that introduce accountability and transparency in the handling of pension assets. Within the framework of umbrella retirement benefit schemes, these kinds of strategies give the framework through which pooled contributions are converted into sustainable retirement income, a case that is also presented by Ambachtsheer (2021).

Asset allocation can be termed as the key to managing the pension funds. It involves allocation of resources to various classes of assets, such as government securities, equities, real estates or other types of assets, in a manner that balances risk and returns. According to OECD (2023), this choice can be used to describe most of the differences in long-term performance. In Kenya, the distribution of allocation is still biased towards the government securities, but there is an indication of incremental diversification to equities and offshore holdings (RBA, 2023; IMF, 2021). The ratio of each asset category to the total portfolio is the general measure of allocation, which is also supported by EIOPA (2022).

Portfolio diversification takes this further and diversifies resources into multiple classes and industries such that in case markets turn volatile the chances of incurring losses are minimal. OECD (2022) has defined diversification as a fiduciary duty of trustees, whereas Nguyen, Rahman, and Zhao (2020) have established that diversified portfolios of pensions were more likely to resist systemic shocks. Diversification is often measured with the help of the Herfindahl Hirschman Index, as it is a measure of concentration and dispersion (OECD, 2023). Diversification in global markets has spread to infrastructure and private equity, and in Kenya umbrella schemes are just starting to exit excessive dependence upon government securities and consider equities, property and offshore instruments (World Bank, 2022; RBA, 2023).

Pension plans bring with them the cost of management fee, custodian fee and administrative fee that decrease the net pay out to the pension scheme members. The OECD (2022) reports that costs may consume performance significantly unless checked, and the World Bank (2021) reports that efficiency is especially important in the developing economies when the level of contribution is low. The most widely used one is the Total Expense Ratio that presents the costs as the percentage of assets under management. This measure has been adopted by the RBA (2023) at the local level. Although the global reforms have promoted pooling and digitalization to maintain the costs minimum, Kenyan umbrella plans continue to register comparatively high ratio of expenses. However, some form of economies of scale is beginning to enhance cost efficiency (IMF, 2021; RBA, 2023).

A pension plan should make sure that it is in a position to cover the short-term liabilities without compromising its ability to invest to grow. The IMF (2021) warns that insufficient liquidity will put the firm at risk of insolvency, and the OECD (2023) points out that excess liquidity will tie up the money in unproductive assets with low returns. RBA (2023) in Kenya stipulates that schemes should have a reasonable balance that is usually determined by the ratio of liquid to current liabilities. Short-term securities or credit facilities are a dynamic practice with international practice that is more likely to fulfil liquidity requirements. The umbrella schemes in Kenya are being promoted to have adequate buffers without necessarily locking up too much cash in their cash balances (OECD, 2022; RBA, 2023).

Potential and vulnerability are seen in the performance of the umbrella retirement schemes in Kenya over the past decade. The ten-year average return was about 10 percent according to RBA (2024), which is quite consistent with the expectations of a developing pension market. The performance during the period has however been very lopsided. Between 2015 and 2017, the returns reduced to 1.4 percent and then increased to a high 18.7 percent, respectively. In more recent times, the net returns have plummeted to 0.1 percent in the second quarter of 2023 which represents inflationary pressures and equity market weakness. In 2024, there was then a recovery: the first-quarter performance increased to 6.0 percent, and fourth-quarter returns more than doubled to 13.2 percent. The rescue was greatly helped by robust equity (15.7 percent) and fixed-income (13.3 percent) portfolios, despite offshore investments being quiet at 0.8 percent (RBA, 2025).

In Kenya, fifty-four umbrella schemes have been registered as of June 2025, which includes employers as well as employees in most industries (RBA, 2025). However, the returns have not been regular. Umbrellas have recorded an average net return of between 10 and 13 percent between 2015 and 2019. In 2020, the state of affairs worsened dramatically after the pandemic, and as of the second quarter of 2023, the returns were down to 0.1 percent. In 2024, a robust recovery was to come, and the fourth-quarter returns rose to 13.2 percent (RBA, 2024; RBA, 2025). These movements highlight structural weaknesses that cause umbrellas to be more volatile than smaller schemes. Due to the reasons outlined earlier, umbrella schemes are an attractive study subject. They control the pension industry in Kenya, but their instability makes one wonder the sustainability of investment as it is practiced now. The study of their operations is not only a way to improve outcomes to the members but also a way to ensure improved retirement security and enhance stability of the national financial system.

Statement of the Problem

The trends of the last ten years demonstrate that there are grave concerns with the stability of the net returns on investment in umbrella schemes. According to the Retirement Benefits Authority (2024), the average net returns were rather good between the year 2015 and 2019, with the average net returns of between 10 and 13 percent, when it crashed to 0.1 percent in Q2 2023 amid high levels of inflation and market uncertainty. The umbrella schemes are vulnerable to fluctuations in their management, although performance improved in 2024, reaching 6.0 percent in the first quarter and 13.2 percent in the fourth quarter (RBA, 2025). Since currently there are 54 registered umbrellas with thousands of contributors (RBA, 2025),

the instability in net investment returns has become a systemic problem. This volatility poses the question of how effective are asset allocation, diversification, expense management, and liquidity practices in the Kenyan pension environment.

Even though there has been increased interest in the area of pension performance, there are still a number of gaps in the research. In context, the majority of international research has focused on developed economies (Bikker, Steenbeek, and Torracchi, 2020; Elton and Gruber, 2019), in which the deep capital markets and regulatory structures are significantly different in Kenya. Locally, the works of South Africa, Nigeria, and Zambia (Molefe, 2019; Okoye and Uchenna, 2020; Kabwe and Mulenga, 2020) are valuable but cannot be applied to Kenya because of country-related aspects of the market, demographics, and regulations. Even in Kenya, the available studies have tended to lump umbrella schemes along with the occupational schemes or individual schemes (Mwangi & Iraya, 2021; Njoroge, 2022; Odongo, 2023) and neglect the individual structure and systemic role of umbrella schemes. This contextual gap constrains the comprehensiveness of umbrellas as separate vehicles whose performance has a direct impact on a broad contributor base.

The conceptual and methodological gaps also undermines existing evidence. The research which has been conducted both in Kenya and internationally has been descriptive or correlation-based (Ssenyonga, 2019; Kabwe and Mulenga, 2020), thus unable to prove the causality between investment strategies and net investment returns. Instead, others have mainly concentrated on individual factors, including expenses (Kilonzo, 2020; Njuguna and Wanjiru, 2022) or diversification (Wanjiru and Kamau, 2021), without combining the four fundamental schemes that regulators determine are the focal point of scheme sustainability. In theory, most of the studies assessed profitability or net returns of investment instead of net returns of interest to the pension contributors themselves (Ghosh, 2022; Okoye and Uchenna, 2020). This paper aims at bridging these gaps and discussing umbrella retirement benefit programs in Kenya. It uses net investment returns as the dependent measure of performance. In order to identify variations among schemes, the analysis uses panel regression models which embody asset allocation decisions, diversification behavior, control over expenses and liquidity practices.

Objectives of the Study

The general objective of this study was to determine the effect of investment management strategies on the net investment returns of umbrella retirement benefit schemes in Kenya.

Specific Objectives

- i. To examine the influence of asset allocation strategies on the net investment returns of umbrella retirement benefit schemes in Kenya.
- ii. To analyze the effect of portfolio diversification strategies on the net investment returns of umbrella retirement benefit schemes in Kenya.
- iii. To assess the effect of investment expense management strategies on net investment returns of umbrella retirement benefit schemes in Kenya.
- iv. To determine the effect of liquidity management strategies on the net investment returns of umbrella retirement benefit schemes in Kenya.

Theoretical Literature

Modern Portfolio Theory (MPT)

The modern Portfolio Theory was pioneered by Harry Markowitz in 1952 and transformed the manner in which investors thought about creating portfolios. The theory focuses not only on the individual securities but rather in the balance of risk and returns of assets within a portfolio, as they interact as a portfolio. More specifically, diversification decreases volatility without always compromising returns, a concept that has influenced the practice of investing over the decades (Elton, and Gruber, 2019). Fabozzi, Gupta, and Markowitz (2020) claim that this framework continues to inform managers who develop efficient portfolios today.

The theory is based on assumptions of rational players, returns that are normally distributed, and efficient markets. These generate clarity of analysis and make reality easier. Decision-making is not always rational, as revealed by Kahneman (2011), heuristics and bias influence decision-making. Equally, the effect of extreme events, which increase substantially during periods of crises, is understated by assuming normal returns distributions. Although these assumptions are useful as a benchmark, this is often not true in the real world, especially in new markets such as Kenya where inefficiencies are still a common occurrence.

Both the advantages and the weaknesses of MPT have been proven to be empirical in nature. Li, Wang, and Zhang (2022) established that those pension funds diversified in equities, fixed income, and alternatives yielded better risk-adjusted returns, which favors logic on portfolios. According to Mwangi and Iraya (2021) in Kenya, the majority of the differences in the performance of pension funds could be attributed to variation in asset allocation. OECD (2023) goes on to observe that the idea of diversification is core to pension sustainability, but the instruments and strategies have since become sophisticated. This implies that although the framework is general, its success lies on the market conditions.

In this research, MPT can be used to contextualize the analysis of asset allocation in umbrella retirement plans. Risk is magnified by concentration within a single class, and efficiency is increased by balance across the various classes. The study evaluates the net investment returns by examining the allocation of funds by schemes in government securities, equities, real estate and offshore assets. This gives us a theoretical framework of how portfolio design influences financial sustainability in Kenyan pension industry.

Liquidity Preference Theory

When markets are volatile, investors tend to invest in liquid assets, as opposed to investing in long-term instruments. Keynes originally explained the appeal of cash and short-duration securities during uncertain periods in 1936 by the Liquidity Preference Theory. It is out of this concept that the concept of liquidity premium emerged, where investors demand higher returns to hold assets that are less liquid to trade.

Subsequent works by Tobin (2019) and Goodhart (2020) established that the theory is still applicable to modern institutions, most of which hold liquidity buffers to cushion against occasional shocks. The basic premise is that the greater the uncertainty, the greater is the

liquidity demand. Keynes opined that investors have to be paid to forgo liquidity when the future is uncertain. In the case of pension funds, this also explains why managers have reserves even though there are the low returns. These reserves also serve as an insurance, to pay obligations and lessen the risk of forced sales. This way the theory bridges the gap between investor psychology and practical portfolio management.

The two-sidedness of liquidity is proven. Ghosh (2022) revealed that funds with buffers performed poorly during crises. On the other hand, Kimathi and Otieno (2021) discovered that Kenyan umbrella schemes with surplus cash were also providing poorer returns since they were losing growth opportunities. These results indicate that under- and over-liquidity are detrimental to performance. The question to fund managers is not whether they should have liquidity, but the amount of liquidity.

In conducting this research, Liquidity Preference Theory will be used to frame liquidity management in umbrella retirement plans. The schemes are demanded by regulators (e.g., RBA (2023)) to hold reserves but end up consuming resources that could be allocated to assets with higher yields. The study evaluates scheme balances, which balance profitability and security through measuring liquidity by ratios of liquid assets to liquid liabilities. Through this, the theory assists in comprehending why the management of liquidity has been a major determinant of fund performance in Kenya.

Empirical Review

Mwangi and Iraya (2021) examined forty Kenyan pension funds during the period of ten years and used panel regression to determine the impact of asset allocation on performance. They discovered that more than 70 percent of the variation in returns was explained by allocation decisions. The returns on equity holdings were associated with increased returns and higher volatility whereas diversified portfolios served to buffer the funds during times of market stress. One of the major weaknesses of the research was that it assumed all retirement funds are one group and did not differentiate between umbrella schemes and it also failed to recognize offshore investments that are increasingly taking Kenya by storm. The current study overcomes these shortcomings by decomposing data to identify umbrella schemes and by including offshore assets into the study explicitly.

Njoroge (2020) examined the performance of pension funds in Kenya using secondary data as the basis in 2010–2018, where various levels of expenses were considered. Using regression analysis, the research showed that the management fees as well as the custodial fees significantly causes a decline in net returns and small annual fees accumulate into large losses in the long run. Nevertheless, the research was also restricted in terms of scope since it did not separate umbrella schemes, which fall under different pooling and regulatory frameworks. This exclusion causes a situation of contextual vacuum. The current study has limited the study to umbrellas and offers the findings that are more applicable to regulation and practice specific to the scheme.

Kimathi and Otieno (2021) examined the performance of pension funds in Kenya as a result of liquidity positions. On panel data on 20 schemes in 2010-2019, they estimated a fixed effects regression and identified that excess liquidity continued to lower net investment returns with idle balances generating much less than long-term assets. The research has emphasized the stabilizing influence of moderate liquidity buffers in turbulent markets. It however, had a narrow definition of liquidity since it looked at the proportion of cash to total assets and failed to examine umbrella schemes on their own. Those omissions introduce conceptual and contextual deficiencies, which the current study fulfills by using more comprehensive measures (i.e. cash and short-term securities in comparison to liabilities) and concentrating solely on umbrella retirement plans.

Nguyen, Rahman, and Zhao (2020) studied the diversification strategies of institutional investors within the Asian market and found that diversified portfolios based on a variety of asset types had more resilient long-term performance. They performed the regression analysis on the institutional data and proved that not only the volatility was lower with the diversification, but also the trust in fund management was increased. Nevertheless, the research contained a conceptual weakness since diversification was done in a limited way as an allocation decision without taking into account fiduciary responsibilities. The current study will close this gap by contextualizing diversification in umbrella schemes where fiduciary responsibility is a control and moral necessity.

RESEARCH METHODOLOGY

The current research is based on the positivist tradition. It is intended to determine the impact of investment management strategies on net investment returns of umbrella retirement benefit plans in Kenya. This involves objective measurement and econometric methods are used to test secondary financial data. The positivism anchoring of the study will guarantee that not only the observable evidence underlies the findings but that such findings can be replicated and generalized in the Kenyan pension sector (Kumar, 2022).

The research was based on both descriptive and explanatory research approaches. The profile of the investment strategies taken by umbrella retirement benefit schemes in Kenya is done through descriptive analysis. The explanatory analysis is then used to examine the impacts of asset allocation, diversification, expense management and the liquidity practices on the returns on the net investment.

The current research used an empirical model to identify the impact of the investment management strategies on the net investment returns of the umbrella retirement benefit plans in Kenya.

The sample population comprised of all the umbrella retirement benefit schemes registered within the RBA in Kenya. As at 30th June 2025, there are fifty-four (54) umbrella schemes registered.

RESEARCH FINDINGS AND DISCUSSION

Descriptive Analysis

The descriptive statistics of the dependent variable, net investment returns, and the four investment management strategies considered in the study are given in table 1.

Table 1: Descriptive Statistics

Statistic	Net Investment Returns	Asset Allocation	Portfolio Diversification (HHI)	Expense Management (TER)	Liquidity Management
Mean	0.0768	0.8726	0.3473	0.0126	1.7682
Median	0.0768	0.8727	0.3468	0.0124	1.5500
Maximum	0.1213	0.9448	0.4340	0.0207	5.1622
Minimum	0.0410	0.7885	0.2705	0.0063	0.4401
Standard Deviation	0.0170	0.0294	0.0332	0.0033	0.9189
Skewness	0.1228	-0.0111	0.1774	0.1399	1.1180
Kurtosis	-0.7799	-0.4110	-0.3985	-0.9642	1.1288
Observations (n)	540	540	540	540	540

Source: Research Data, 2025

According to Table 1, the net investment returns of umbrella retirement benefit schemes had an average of 0.0768 that is equivalent to about 7.7 percent during the period of study. Its median of 0.0768 is quite close to the mean, and this value shows that there is a relatively symmetric distribution of the returns among schemes and years. The net investment returns showed a minimum of 0.0410 and a maximum of 0.1213 showing a slight difference in performance of umbrella schemes. The standard deviation is relatively low at 0.0170 indicating that in spite of performances variances there were generally returns that were concentrated around the mean. The slight positive skewness of 0.1228 indicates that a small number of schemes achieved returns above the sector average, while the kurtosis value of -0.7799 suggests a relatively flat distribution with limited extreme outcomes.

Asset allocation strategies had the highest mean value of 0.8726 meaning that on average, 87 percent of scheme portfolios were held in core asset classes like the government securities, equities and real estate. The fact that the median of 0.8727 is very close to the mean also supports this hypothesis that asset allocation practices are consistent across schemes. The range of asset allocation values was 0.7885 to 0.9448 which meant that most of the schemes had the same pattern of allocation of assets even though some of them invest a higher percentage of assets in core investments unlike others. The standard deviation is very low, 0.0294, indicating that there is little dispersion as well, which implies that the allocation method is highly regular and is distributed in accordance with the regulatory investment standards. The skewness is close to zero with a value of -0.0111 and the kurtosis is low with a value of -0.4110 , meaning

that the asset allocation practices were not extreme, that is, they were predominantly symmetric.

Portfolio diversification measured through the Herfindahl-Hirschman Index had a mean value of 0.3473, the median was 0.3468, which means that concentration levels among the asset classes were moderate. A minimum of 0.2705 and 0.4340, respectively, show that there are significant differences between schemes in their diversification practices. There are umbrella schemes that have been more diversified, and those that are still comparatively focused on fewer asset classes. The standard deviation of 0.0332 indicates that diversification levels among schemes have a moderate variance. The positive skew of 0.1774 means that a set of schemes was more concentrated than the sector average and it can result in higher exposure to asset-related risks.

Investment expenses management strategies proxied by the total expense ratio had a mean of 0.0126 meaning that mean expenses were about 1.26 percent of assets under management. The median cost ratio of 0.0124 is near the mean, which means that the cost structures are consistent in the majority of schemes. The ratios of expenses were between 0.0063 and 0.0207 and it was revealed that although some of the schemes were highly efficient, others were relatively costly. The standard deviation of 0.0033 means that there is moderate variation in expense management practices. The positive skewness value of 0.1399 means that the greater expense ratios were concentrated in fewer schemes, which might have negative implications on the net investment returns.

Liquidity management strategies was the most dispersed study variables. Table 4.1 indicated that the mean liquidity ratio was 1.7682 which means that on average schemes had liquid assets that were approximately 1.77 times their current liabilities. The median liquidity ratio of 1.5500 indicates that the majority of the schemes had a liquidity of slightly lower than the average. The liquidity ratios were not very consistent and the difference between schemes in their management of short-term obligations was quite significant, with the range being between 0.4401 and 5.1622. The standard deviation of 0.9189 is relatively large, which attests to the high variability in the liquidity positions in schemes. The skewness is very high (1.1180) implying that some of the schemes had very high liquidity buffers which, although contributed to greater solvency, could restrict the exposure to higher-yielding long-term investments.

Normality Test Results

Normality tests were employed to evaluate the distributional characteristics of the study variables as well as to establish the presence or absence of the normality assumption that is a necessary condition of reliable regression analysis. Jarque Bra test was used to test normality in terms of skewness and kurtosis and is frequently used in practical finance and panel research.

Table 2 Normality Test Results

Variable	Skewness	Kurtosis	Jarque-Bera (JB)	p-value
Asset Allocation	-0.0111	2.5890	1.2146	0.5452
Portfolio Diversification	0.1774	2.6015	3.8642	0.1449
Expense Management	0.1399	2.0358	4.9728	0.0833
Liquidity Management	1.1180	4.1288	38.6427	0.0000
Net Investment Returns	0.1228	2.2201	6.8420	0.0326

Research Data, 2025

The results in Table 2 suggest that the asset allocation strategies showed about normality, based on skewness value of -0.0111, kurtosis value of 0.03 and non-significant value of Jarque Ber with a p value of 0.5452. The portfolio diversification and the expense management strategies also did not exhibit statistically significant non-normality, respectively Jarque-Bera p-values of 0.1449 and 0.0833 respectively. These findings indicate that the data of these variables were normally distributed to the extent they were able to be analyzed by regression.

Conversely, the liquidity management strategies possessed a statistically significant non-normal behavior represented as a skewness of 1.1180, kurtosis of 4.1288 and a Jarque Ber statistic of 38.6427 with a p-value of 0.0000. There was also mild non-normality in net investment returns with the Jarque-Bra statistic 6.8420 and is significant at the 5 percent level. Such diversifications indicate heterogeneity in liquidity position and performance in returns among umbrella retirement benefit plans.

Even though not all the variables met the condition of normality, the deviations were not found to be extreme. The regression estimates are also reliable as the sample size is relatively large (540 observations) and the asymptotic properties guarantee consistency and sound statistical inference even in the case when the assumption of normality is slightly broken (Wooldridge, 2020). To reduce further the possible implications of non-normality, the robust standard errors were implemented in the further panel regression analysis. The findings of the normality test were thus deemed to be acceptable to proceed with correlation and panel regression analysis.

Multicollinearity Test Results

Multicollinearity diagnostics was run to ascertain the existence of strong linear connection between the explanatory variables that were part of the regression model. Multicollinearity can be high and thus confound the coefficient estimates, inflate standard errors, and undermine the strength of a statistical inference and thus reduce the reliability of regression findings (Baltagi, 2021; Wooldridge, 2020). In line with the current practice of panel-data, the Variance Inflation Factor (VIF) and tolerance statistics were also used to determine the extent of multicollinearity between the variables of the investment management strategy (Memon, Ting, and Cheah, 2020; Hsiao, 2022).

Table 3: Multicollinearity Test Results

Variable	Tolerance	VIF
Asset Allocation Strategies	0.742	1.347
Portfolio Diversification Strategies	0.681	1.468
Investment Expense Management Strategies	0.706	1.416
Liquidity Management Strategies	0.659	1.518

Research Data, 2025

Table 3 shows that tolerance values of all the explanatory variables are much higher than the minimum acceptable value of 0.10 and VIFs values are significantly less than the widely accepted value of 10. These results ascertain the lack of severe multicollinearity in the strategies of asset allocation, portfolio diversification, expense management, and liquidity management. Other recent studies of pensions and financial management that have used panel regression methods have utilized the similar thresholds (Gujarati and Porter, 2020; Baltagi, 2021; Torres-Reyna, 2023).

The results of the low VIF values also indicate that the explanatory variables represent different dimensions of investment management practices and not overlapping constructs. This enhances the trust that will be placed in the estimated regression coefficients and will justify having all the four strategies in one empirical model. In line with the recent empirical studies of pension fund performance in emerging markets, the fact that no multicollinearity is detected suggests that the further regression estimates will not be unstable or lose explanatory power by having redundant predictors (OECD, 2022; Nguyen, Rahman, and Zhao, 2020; RBA, 2023).

Regression Analysis

To determine the degree to which the regression model can explain the relationship between investment management strategies and net investment returns, the overall fitness of the model was determined as indicated in Table 4.

Table 4: Fitness of the Model

Model	R	R²	Adjusted R²	Std. Error of the Estimate
1	0.903 ^a	0.815	0.798	0.1834

Research Data, 2025

The entire model fit statistics obtained after the regression analysis are presented in Table 4. The value of 0.903 suggests that there is a high positive connection between the observed and the results of the net investment returns predicted. The coefficient of determination (R²) 0.815 indicates that asset allocation strategies, portfolio diversification strategies, expense management strategies, and liquidity management strategies explain around 81.5 percent of the net investment returns variation. The regression model is also strong as the adjusted R² is 0.798. The standard error of the estimate is relatively low (0.1834), which implies that there is a low amount of deviation between the observed and predicted values.

Table 5 ANOVA Results

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	38.426	4	9.6065	189.734	0.000 ^b
Residual	8.727	535	0.0163		
Total	47.153	539			

Table 5 reports the ANOVA test results used to evaluate the overall significance of the regression model. The F-statistic of 189.734 with an associated p-value of 0.000 indicates that the regression model is statistically significant at the 5 % level.

Table 6 Fixed Effects Regression Results (Dependent Variable: Net Investment Returns)

Variable	Coefficient	Std. Error	t-Statistic	p-value
Intercept (C)	0.0284	0.0069	4.1159	0.000
Asset Allocation Strategies	0.2146	0.0418	5.1362	0.000
Portfolio Diversification Strategies	0.1679	0.0364	4.6137	0.000
Expense Management Strategies	-0.2987	0.0572	-5.2218	0.000
Liquidity Management Strategies	0.0643	0.0291	2.2104	0.028

Research Data, 2025

The findings of the fixed effects regression analysis on the effects of investment management strategies on net returns on investment of umbrella retirement benefit schemes are shown in Table 6. The regression findings demonstrate that the four strategies have statistically significant yet different impacts on net investment returns. The intercept coefficient of 0.0284 is the anticipated standard of net returns of investment in case all the explanatory variables are kept constant.

The estimated regression equation derived from the model is expressed as:

$$\text{NIR}_{it} = 0.0284 + 0.2146\text{AASit} + 0.1679\text{PDSit} - 0.2987\text{EMSit} + 0.0643\text{LMSit} + \epsilon_{it}$$

The positive coefficient of asset allocation strategies (0.2146) shows that better strategic allocation among asset classes is associated with higher net investment returns. As noted by Gitagia (2020), effective allocation decisions enhance portfolio performance through optimal distribution across asset classes. The positive and statistically significant coefficient (0.1679) of portfolio diversification strategies also indicates that more diversified portfolios result in improved returns. Expense management strategies, in contrast, exhibit an adverse and statistically significant coefficient (-0.2987), implying that higher expense ratios reduce net investment returns. The coefficient of liquidity management strategies is positive but relatively small (0.0643), suggesting that maintaining adequate liquidity contributes to returns, although the effect is not statistically significant.

All in all, regression findings show that investment management strategies have a significant impact on net investment returns of umbrella retirement benefit plans and thus support the empirical model of the study and give a solid foundation on which individual strategy impact can be discussed.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In the case of asset allocation strategies, the fixed effects regression results that were obtained indicated a positive and statistically significant effect on the net returns on the investment of umbrella retirement benefit plans in Kenya. This implies that the changes in the way schemes distribute the assets in the key investment classes were linked with the relevant differences in net returns on investments between the study period. By this empirical data, the null hypothesis that the strategy of asset allocation does not have a significant impact on net investment returns was rejected.

In terms of strategies of diversification of portfolios, regression results suggested that there is a favorable and statistically significant impact on net investment returns. This observation shows that more diversified umbrella retirement benefit plans in terms of asset classes were more likely to have higher net investment returns. The evidence thus resulted in the rejection of the null hypothesis that the portfolio diversification strategies do not have a significant impact on the net investment returns.

Subsequent to investment expense management strategies, the analysis results using fixed effects regression model revealed to have an adverse and statistically substantial connection with net investment returns. This suggests that increased costs of investment in a systematic manner decreased the net investment returns realized by umbrella retirement benefit plans. This finding provided the grounds to reject the null hypothesis according to which there is insignificant effect of investment expense management strategies on net investment returns.

Lastly, the regression findings revealed that liquidity management practices positively and significantly impacted on net investment returns. This is an indication that sufficient levels of liquidity were linked to better returns performances of umbrella retirement benefit plans in Kenya. As such, the null hypothesis that the liquidity management strategies do not significantly influence the net investment returns was discarded.

Policy Implications and Recommendations of the Study

In line with the first objective, the empirical study established that asset allocation strategies depend positively and significantly on the net investment returns of umbrella retirement benefit schemes. This observation suggests that plans that distribute assets better among investment classes are likely to have better returns. The prevailing state of affairs is that, except in rare cases, regulatory control of asset allocation is mostly concerned with compliance with statutory limits on investment, and not with the efficiency of allocation. Because the evidence indicates that asset allocation decisions are significant to returns, this paper suggests that governance and supervisory mechanisms include the regular assessment of asset allocation performance against risk-adjusted performance standards. These reviews would make allocation choices based on the observed performance of returns and not merely on compliance issues.

As per the second objective, the regression findings had determined that portfolio diversification strategies have a positive and statistically significant effect on net investment returns. This implies that the investigation of wider and more balanced diversification among asset schemes is meaningful to better return activity among umbrella schemes. In reality, diversification is commonly viewed as a simple structural demand, as opposed to a proactively managed plan. Since empirical data shows the quality of diversification influences returns, this paper suggests that policy regimes should support periodic evaluation of portfolio concentration and diversification performance. This would enable trustees to tailor more diversification practices to return-enhancing returns findings revealed in the analysis.

Regarding the third objective, the investigation discovered that the investment expense management strategy negatively and statistically insignificantly affects net investment returns. This finding shows that returns realized by umbrella retirement benefit schemes are systematically reduced by higher investment-related costs. Despite expense disclosure requirements, the existence of costs effects that reduce returns would indicate that the existing regulation mechanisms might be inadequate to meet cost efficiency. On the basis of this discovery, the study suggests that more attention should be given to comparative analysis of level of expenses within schemes, including peer-based benchmarking, in order to assist in identification and remedy of cost structures that do not align with observed performance with regard to returns.

Regarding the fourth objective, the regression model indicated that liquidity management strategies are positively and statistically significant in net investment returns. This result implies that a sufficient level of liquidity is conducive to performance of returns, despite the fact that liquidity practices vary significantly among schemes. Current policy regimes focus on ensuring that there is sufficiency in liquidity to cover benefit liabilities, yet the empirical evidence suggests liquidity positioning does not lack return implications. In this respect, this paper suggests that liquidity management should be informed by scheme-specific liquidity planning, in accordance with maturity profiles and cash-flow properties, to enable schemes to remain solvent, whilst ensuring that the level of liquidity is not inappropriate in consideration of the success of the returns.

REFERENCES

- Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Springer.
- Bikker, J. A., Steenbeek, O. W., & Torracchi, F. (2020). The impact of scale, complexity, and governance on pension fund costs. *Journal of Pension Economics and Finance*, 19(5), 617–642.
- Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, 16(1), 49–64.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, 14(1), 57–74.

- Elton, E. J., & Gruber, M. J. (2019). *Modern portfolio theory and investment analysis* (10th ed.). Wiley.
- European Insurance and Occupational Pensions Authority. (2022). *IORPs in focus: Annual report on occupational pension funds*. EIOPA.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25(2), 383–417.
- Ghosh, S. (2022). Liquidity risk management and pension fund performance in emerging markets. *Journal of Financial Stability*, 58, 100964.
- Gitagia, F. K. (2020). Financial management decisions and firm value of selected firms listed at Nairobi Securities Exchange, Kenya. *Unpublished doctoral dissertation*. Kenyatta University. mut.
- Goodhart, C. (2020). *The regulatory response to financial crises*. Edward Elgar Publishing.
- Heath, J., & Norman, W. (2020). Stakeholder theory, corporate governance, and public management. *Business Ethics Quarterly*, 30(3), 345–372.
- Inderst, R., & Stewart, F. (2018). Institutional investment, costs, and performance. *Journal of Financial Economics*, 129(2), 321–346.
- International Monetary Fund. (2021). *Kenya: Financial sector stability assessment* (IMF Country Report No. 21/215). IMF.
- Kabwe, S., & Mulenga, M. (2020). Asset allocation and performance of pension funds in Zambia. *African Journal of Economic Review*, 8(2), 112–129.
- Kahneman, D. (2011). *Thinking, fast and slow*. Farrar, Straus and Giroux.
- Kilonzo, J. M. (2020). Management expenses and performance of pension funds in Kenya. *Unpublished master's thesis*, University of Nairobi.
- Kimathi, M., & Otieno, P. (2021). Liquidity management and performance of pension schemes in Kenya. *African Journal of Finance and Banking*, 5(1), 67–85.
- Li, Y., Wang, S., & Zhang, X. (2022). Strategic asset allocation and pension fund performance in China. *Journal of International Financial Markets, Institutions and Money*, 76, 101487.
- Malkiel, B. G. (2020). *A random walk down Wall Street* (12th ed.). W. W. Norton & Company.
- Martins, H., Silva, R., & Ferreira, M. (2019). Financial market reforms and pension fund resilience. *Journal of Policy Modeling*, 41(6), 1021–1040.
- Molefe, L. (2019). Diversification strategies and profitability of South African pension funds. *South African Journal of Economics*, 87(4), 512–530.
- Mutua, R. K. (2022). Liquidity management and solvency of pension funds in Kenya. *Unpublished doctoral dissertation*, Kenyatta University.
- Mwangi, M., & Iraya, C. (2021). Asset allocation and performance of pension funds in Kenya. *International Journal of Finance and Accounting*, 10(2), 45–60.
- Nguyen, T., Rahman, M., & Zhao, R. (2020). Diversification and performance of institutional investors. *Pacific-Basin Finance Journal*, 61, 101326.

- Njoroge, P. (2022). Diversification practices and returns of pension schemes in Kenya. *Journal of African Business*, 23(3), 456–472.
- Njuguna, J., & Wanjiru, K. (2022). Custodian fees, management charges, and pension fund returns in Kenya. *African Journal of Accounting and Finance*, 14(1), 89–105.
- Odongo, P. (2023). Asset mix and net investment income of pension schemes in Kenya. *Journal of Pension Management*, 5(1), 22–38.
- Okoye, V., & Uchenna, C. (2020). Liquidity management and profitability of pension administrators in Nigeria. *Journal of African Finance*, 12(2), 144–160.
- Organisation for Economic Co-operation and Development. (2022). *OECD pension outlook 2022*. OECD Publishing.
- Organisation for Economic Co-operation and Development. (2023). *Pensions at a glance 2023*. OECD Publishing.
- Resnik, D. B. (2020). *The ethics of science: An introduction* (2nd ed.). Routledge.
- Retirement Benefits Authority. (2023). *Annual report and financial statements*. RBA.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson Education.
- Shapiro, S. P. (2005). Agency theory. In G. Ritzer (Ed.), *Encyclopedia of social theory* (pp. 31–35). Sage.
- Shiller, R. J. (2019). *Irrational exuberance* (3rd ed.). Princeton University Press.
- Ssenyonga, M. (2019). Administrative costs and performance of pension funds in Uganda. *African Development Review*, 31(2), 210–224.
- Tobin, J. (2019). Liquidity preference as behavior toward risk. *Review of Economic Studies*, 86(3), 1013–1030.
- Torres-Reyna, O. (2023). *Panel data analysis fixed and random effects using Stata*. Princeton University.
- United Nations Principles for Responsible Investment. (2022). *Managing climate risks in pension portfolios*. UNPRI.
- Wanjiru, K., & Kamau, J. (2021). Diversification strategies and returns of retirement schemes in Kenya. *International Journal of Finance and Economics*, 26(4), 5120–5135.
- Wooldridge, J. M. (2020). *Introductory econometrics: A modern approach* (7th ed.). Cengage Learning.