FIRM SPECIFIC FACTORS AND FINANCIAL SUSTAINABILITY OF PENSION SCHEMES IN KENYA

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ABSTRACT

Financial sustainability among pension schemes is of paramount importance as lack of it implies loss of member funds. Pension schemes in Kenya are associated with loss of billions of money every year. Funds flow has typically been positive but with liquidity issues, portability and imminent retirement of a large cohort of members alters the scenario. The RBA 2016 and 2019 report indicated that there was an improvement in financial returns in between 2006 and 2015 which could be attributed to the improved investment strategies adopted by the service providers. However, in 2018 there was a drop in investment returns. Such results could be partly attributed to the firm specific factors of the pension schemes. The general research objective of this study was to examine the firm specific factors affecting financial sustainability of pension schemes in Kenya. Specifically, the research study sought to determine how financial sustainability of pension schemes in Kenya was influenced by portfolio mix, operating costs, liquidity, and fund size. This study had four independent variables: portfolio mix, operating costs, liquidity, and fund size. The dependent variable was financial sustainability of pension schemes in Kenya. The study was based on four theories namely; modern portfolio theory, transactional cost theory, liquidity theory and budgeting theory. The study's target population was all the 1340pension schemes in Kenya, while the sample population was the 93 pension schemes arrived at using Yamane formula. The study period was five years spanning 2016 to 2020, while a descriptive research design was employed. Secondary data for 93 pension schemes was obtained from published financial statements and annual reports. Data analysis was achieved through conducting inferential statistics as well as descriptive statistics. Regression and correlation analysis were used to test the study hypotheses by establishing the relationship between firm specific factors and financial sustainability. The study found that portfolio mix (β=0.344, p=0.043) and fund size (β=0.336, p=0.000) had a positive and significant effect on the financial sustainability among pension schemes in Kenya. The study also found that liquidity (β=0.021, p=0.031) and operating costs (β=0.637, p=0.000) had a positive and significant effect on the financial sustainability among pension schemes in Kenya. The results also indicated R2 of 0.584 which implied that the selected independent variables contributed 58.4% to variations in financial sustainability. The study recommends that pension schemes' policy makers should come up with policies that increase portfolio mix as this will lead to an increase in financial sustainability. The study further recommends that management and directors of pension schemes should develop strategies aimed at increasing fund size as this leads to a rise in financial sustainability.

INTRODUCTION

Background of the Study

Pension issues have received much attention in many countries over the past Decades especially to the policymakers (Osano, 2013). It is a global agenda because people in the formal and the informal sectors all over the world at one time in their lives would either retire or exit from employment. According to the Organization for Economic Cooperation and Development (OECD), life after retirement is a phenomenon that governments all over the world have been grappling with (OECD, 2016). In their study on "Private pensions and policy responses to the financial and economic crisis", Antolín and Stewart, (2009), indicated that most pension systems around the world consist of three pillars, namely Public, Occupational and private. The same observation was made in the study "Annuities and other retirement products: Designing the payout phase" (Rocha, Vittas, & Rudolph, 2011). However, the relative compositions of these three pillars differ considerably between countries. Occupational pension plans were dominant in Western Europe, North America, Asia-Pacific countries (OECD, 2016).

Studies carried out worldwide indicate that in order to perform better, pension schemes especially occupational and private ones, must be managed professionally under a regulated environment (Campbell &Viceira, 2012). The professional services were provided for a fee that actually has a negative impact on the pension schemes' cash flows. The greatest source of their income is the contribution from the members as well as top ups from sponsors particularly for registered occupational pension schemes. A study in United Kingdom (UK), found that better investment returns from pension schemes attracts and retains senior members in the organization (Blake, 2012). Further, strategic asset allocation is a focal issue for the pension schemes world over (Campbell &Viceira, 2012). An asset allocation can bring either high or low returns depending on the investment choices made by the funds' managers.

In the African context, the role played by the pension industry cannot be underrated (OECD, 2016). African culture socially binds its community members so much so that senior citizens as well as the unfortunate members of those communities expect to be supported by the working generation (Chirchir, 2007; OECD, 2016). However, the uptake of the pension arrangements as alternative to the traditional culture of catering for old age ranges between 24.7% and 31.2 % which is low in comparison to the pension schemes uptake globally which stands at 56.2% (Ondundo, 2013; Mutua, 2013). Except for South Africa, Tunisia and Egypt, the Pension industry in Africa is generally not well established partly because issues related to retirement were not taken seriously. More importantly, the culture of saving for the future is not a virtue to majority of Africans (Njuguna, 2012). This is attributed the fact that majority of Africans live below the poverty line such that their major concern is survival which is a basic need (OECD, 2015).

Global Perspective of Pension Schemes Financial Sustainability

The International Labor Organization (ILO) recognizes the key role played by social protection policies in promoting the human right to social security for all, reducing poverty and inequality, and

supporting inclusive growth (ILO, 2017). However, ILO estimates that in 2017, only 29% of the global population had access to comprehensive social security systems and that Africa, Asia and Arab states contributed heavily to the 71% of the world population with partial or no coverage (ILO, 2017). The ILO attributed the low coverage to underinvestment in social protection, while the World Economic Forum (WEF) blamed the situation on a lack of access to pension products, low uptake of available options, lack of a savings culture, low levels of financial literacy, and inadequate savings (below 10%-15% of annual salary). The problem is magnified by the shift from defined benefit to defined contribution plans (Mercer, 2016).

Hlavac (2011) studied the financial returns of the Czech Private Pension Schemes and compared their sustainability with the other European countries. The study revealed that the financial returns of these schemes were essentially affected by the contributions from members and the operational costs incurred in the provision of the management Services. Hustead (2009) observed that the impact of the administrative cost on cash flows for the Defined Contribution (DC) system was greater as compared to the Defined Benefits (DB) system. Initially, Occupational pension schemes in many OECD countries had customarily been structured as DB schemes. However, in recent years there has been a shift from DB to DC plans, especially in advanced countries such as U.K and U.S. (OECD, 2015). In the case of DB plans, terminal benefits were paid to the retirees as initially agreed irrespective of company's financial results. In the DC plans, retirees were paid their terminal benefits according to the Sustainability of their respective schemes.

Petraki (2012) conducted a study to investigate the Sustainability of personal pension funds in the UK. The research identified two significant factors: fund's mix and fund size. The outcome demonstrated that risk-adjusted returns are statistically insignificantly different from zero but funds significantly outperform their benchmarks. Petraki (2012) observed that Sustainability changes with fund's mix as a control variable. However, the relationship was shown to be more complex with the effect varying for both private and public pension funds. Risk-adjusted returns of the small and the large funds were both indifferent from zero but the large funds are better at outperforming their benchmarks.

Studies by Laros and Lundbergh (2012), Dyck and Pomorski (2011) and Broeders, Van Oard, and Rijsbergen (2015) have documented the importance of the size of collective investment vehicles such as pension schemes and mutual funds. Larger pension schemes have lower administration and asset management costs due to their increased bargaining ability in the procurement of services and investment of funds, resulting in better net returns for members. A difference in the cost structure of two pension schemes, of between 50 and 150 basis points per year, results in 22% more pension income after 40 years (Laros&Lundbergh, 2012).

A study by Dyck and Pomorski (2011) based on data from an international sample of 842 pension schemes on the CEM Benchmarking Inc. database found that significant economies of scale arose out of pension scheme size. Large schemes outperformed small schemes by 43 to 50 basis points per year as a result of cost savings through internal management and superior returns from increased allocation to alternative assets (private equity and real estate), with better returns.

According to Huang and Pang (2015), academicians and practitioners in finance and investment field regard risk tolerance as a key determinant of individual and institutional investors' portfolio allocation. In addition, research by the International Monetary Fund (2011) noted that asset allocation by individual and institutional investors had changed due to increased awareness of liquidity and sovereign credit risks following the global financial crisis.

Regional Perspective of Pension Schemes Financial Sustainability

Pension and social security coverage in sub-Saharan African countries is limited (less than 10%) compared to 50% in Mauritius and Seychelles, and is implemented through unfunded public service pension schemes, mandatory schemes mainly for formal sector workers, voluntary occupational schemes for private sector workers, and individual pension schemes (Stewart &Yermo, 2009). The main cause of the low coverage is that most employment is found outside the formal economy, making regular contribution for pension difficult (Abels&Guven, 2016).

The design of national pension systems varies across sub-Saharan African countries, with 38 out of 44 countries for which information was available having mandatory contributory national pension schemes. Thirty-one out of 38 countries have defined-benefit systems financed on a pay-as-you-go basis. Uganda, Swaziland, Kenya, and Gambia have provident funds, while Malawi and Nigeria have funded defined-contribution schemes and Ghana has a hybrid of a DB and a DC system (Abels&Guven, 2016).

In most sub-Saharan African countries, civil servants are covered by defined benefits pension schemes financed on a pay-as-you-go basis. Thirty-three out of 44 countries have separate schemes for government workers, for which information was available; 10 countries have integrated pension systems that cover all workers alike, while Swaziland has a universal noncontributory scheme (Abels&Guven, 2016). Countries in Africa have faced different structural and pension-systems challenges. This has led to different reform approaches in these countries, aimed at diversifying pension provision in order to strengthen the retirement security of their workforce, and increase coverage and savings over the long run (Stewart &Yermo, 2009).

Macha and Shulia (2013) investigated the determinants of Sustainability among pension schemes in Tanzania. They carried out studies of four pension schemes that had 64 branches over the period 2003 to 2011. The percentage of pension scheme assets invested in different assetsand fund size was the study's independent variables. The study found a positive and statistically significant relationship between the ratio of active members of a pension scheme and financial sustainability while portfolio mix exhibited a positive but not significant association with financial sustainability. Simbabrashe et al. (2014) conducted an empirical study on the efficiency of pension schemes in Zimbabwe in the post multicurrency era from 2010 to 2013. The research was based on quantitative data such as portfolio returns of pension funds and their asset sizes. The research sample was 20 standalone pension funds and 9 fund administered pension funds using a cluster sample. Based on the data presented on Zimbabwean pension fund, the analysis demonstrated that there was no relationship between liquidity and its investment sustainability. Therefore, the study established that liquidity alone does not determine the sustainability of a pension.

Local Perspective of Pension Schemes Financial Sustainability

The current retirement benefits system in Kenya can be classified using the classification recommended and commonly applied by the Organization for Economic Co-operation and Development (OECD, 2015), as public pension and private pension plans. The public plans are social security schemes where the government is directly involved in the payment of pension benefits since it is the largest employer (Mutuku,2014). All the other types of pension plans are classified as private plans, which typically comprise personal Pension schemes as well as occupational pension schemes. The weaknesses associated with the public pension system such as low and delayed payments of those benefits among other issues, were to be addressed by the private pension system (Forbes, 2013). In view of this, there has been a notable rapid expansion in the works-related pension system (Davis, 2013).

Kenya, like many countries out to improve the welfare of their citizens, is in pursuit of an economic development programme adopted by the industrialized countries which have a capitalist economic system (Nyakundi, 2014). This capitalistic economic system has brought about crucial changes to social and economic lifestyles of its citizens. In other words, the new economic system has brought about a transition from an old system of living to a modem capitalistic lifestyle where older people were relatively less dependent on their communities and families for their daily needs (Chirchir, 2007). A change in lifestyles demands a change in the preparation for retirement (OECD, 2015).
Reports from Republic of Kenya show that pension funds in Kenya are associated with loss of billions of money every year relating to sustainability. Funds flow has typically been positive but with liquidity issues, portability and imminent retirement of a large cohort of members alters the scenario (RoK, 2017). Pension funds cannot meet their financial obligations when they fall due without incurring significant unexpected costs.

Actuarial Services (2017) pension schemes investment sustainability survey in Kenya used the objective method to classify schemes into three risk profiles, based on the percentage of total assets allocated to fixed income securities: Conservative with 80% to 100%, moderate with between 55% and 79%, and aggressive with 30% to 54% allocated to fixed income securities. This view was supported by Njeru, Murage, and Kasomi (2015), who noted that the stock versus bond allocation by a pension scheme depends mainly on the board's risk tolerance and investment horizon and this influences financial sustainability of pension schemes.

A study carried out by Muia (2015) on the effect of asset allocation on the financial sustainability of Pension Funds in Kenya came out with similar findings as the study done by Tonks (2005). The study found out that there is a positive correlation between a pension fund's sustainability and the returns of the various assets. The study also revealed that operating costs have a significant negative influence on sustainability of pension Funds in Kenya. However, this study was carried for only one year and therefore the data might not be an adequate representation of the study variables.

Gakure and Gakera (2015) focused their study on determining their influence of market volatility, Risk control policy, good governance among others on the financial returns of individual pension schemes. They concluded that good governance had strong influence on the financial returns of

individual pension schemes. An improvement both in policy and regulatory frameworks on individual pension schemes in Kenya, was highly recommended.

Statement of the Problem

Pension funds globally have achieved a positive investment returns especially in developed countries. The financial sustainability of pension funds globally was strong in 2019. Real investment rates of return of pension funds exceeded 5% in 29 out of 46 jurisdictions in 2019, even exceeding 10% in 13 of them (OECD, 2021). Pension funds in only two countries did not achieve a positive investment performance: The Czech Republic (- 1.4%) and Poland (-2.7%) (OECD, 2021).

In Kenya, the pension sector's overall returns have been inconsistent. The pension industry investment return reported were 20 percent, 0 percent, and 3 percent for 2016, 2017, and 2018, respectively, diminishing all of the profits that had previously been gained (RBA, 2020). The average annual increase in assets from 2017 to 2019 was only 3%, which suggests that both the investments made and the costs associated with administering the money were higher (RBA, 2020). RBA (2021) also notes that the funding risks have increased despite the pension sub-sector registering growth. This is due to pension liabilities accumulating faster compared to investments in assets. In addition, as a result of weaker economic performance and inadequate support of quasi-government programs, unremitted contributions have also increased. Some of the firm specific determinants that are expected to influence the financial sustainability of pension schemes include portfolio mix, operating costs, liquidity and fund size (Chirchir,2010).

The financial sustainability of pension schemes in Kenya has been indicated to be poor (Were, Amuhayalravo, and Wanjala, 2017). This is so because managers have had no incentive to minimize costs to scheme members which have resulted to low investment returns, and in some cases delay of benefits upon retirement (Tari, 2014). Also, the current investment portfolio in Kenya is highly concentrated in few investment categories; equities, government securities and real estate, thus exposing them to interest rate risks, market risks and liquidity risks (Pension industry report, 2017). A few past studies carried out locally have addressed various aspects of pension schemes in Kenya. For instance, Osano (2013) sought to identify investment strategies adopted by investment funds in Kenya on the financial sustainability of the funds and concluded that investment funds take an active investment strategy. Njoroge (2014) focused on the effect of firm size on the sustainability of pension schemes but ignored other factors. A study by Mahfoudh (2013) on the effect of selected firm characteristics on firm financial sustainability as measured by return on assets suggested that other studies can be done using a combination of factors other than firm size only and also using other measures of financial sustainability other than return on assets which they used. However, Michira (2013), contends that fund size doesn't matter when choosing a retirement scheme that is financially sustainable. He concludes that some pension schemes are making losses despite having a large fund size and benefiting from economies of scale. Bauer (2010) also established that fund size negatively affects the financial sustainability of pension firms. Mutuku, Kathurima, and Toroitich (2013) findings indicated that liquidity and operating costs have an insignificant impact on the financial sustainability of pension firms in Kenya. Mwachanya (2015) contends that portfolio diversification has a positive but insignificant impact on the financial sustainability of pension

firms. Thus, previous studies on financial sustainability of pension schemes were extended by way of focusing on other factors that affect financial sustainability of pension schemes using empirical evidence from Kenya. Further, the findings from the previous studies are mixed. Based on these suggestions and the gaps identified, the current study sought to analyze the firm specific factors and financial sustainability of pension schemes in Kenya.

Study Objectives

General Objective

To establish the effect of firm specific factors and financial sustainability of pension schemes in Kenya.

Specific Objectives

i. To determine the effect of portfolio, mix and financial sustainability of pension schemes in Kenya
ii. To establish the effect of operating costs and financial sustainability of pension schemes in Kenya
iii. To assess the effect of liquidity and financial sustainability of pension schemes in Kenya
iv. To examine the effect of fund size and financial sustainability of pension schemes in Kenya.

Research Hypotheses

Ho_1 There is no significant effect of portfolio mix and financial sustainability of pension schemes in Kenya

Ho_2 There is no significant effect of operating costs and financial sustainability of pension schemes in Kenya

Ho_3 There is no significant effect of liquidity and financial sustainability of pension schemes in Kenya

Ho_4 There is no significant effect of fund size and financial sustainability of pension schemes in Kenya

Significance of the Study

Practitioners

Pension schemes in Kenya may benefit from the research in that it may shed light on strategies they ought to adopt to enhance their financial sustainability and indeed the welfare of retirees. It may also prompt the management to re-assess their decisions when launching pension products in the Kenyan market. It may aid them when formulating strategies, standards, policies, procedures and guidelines that may help in responding to challenges facing the pension scheme.

Researchers and Scholars

The research findings will be useful to researchers, scholars as well as students in learning from them or help them carry further research in similar fields. Researchers and academicians will be

using the results to define new research areas on different subjects discussing the same issue by doing a study of the existing literature in identification of research gaps.

Policy Makers

The regulator, the RBA may find this study helpful in understanding how the industry is embracing prudential guidelines meant to mitigate credit and liquidity risk, appreciate the different controls being applied by pension schemes in managing these risks, level of adoption of related preventive measures and the effect this may have on pension schemes financial sustainability. This may guide the regulator in the formulation of further policies for enforcement in the pension schemes.

Scope of the Study

This research study was limited to the effect of portfolio mix, operating costs, liquidity and fund size on the pension schemes financial sustainability. The study's basic context was Kenyan pension schemes. There are over 1340 registered pension schemes in Kenya (RBA, 2020). The target population consisted of all the registered pension schemes. The study was based on a five-year period (2016-2020) and relied on secondary data which was obtained from pension schemes annual financial reports.

Limitations of the Study

The focus was on some of the elements that are thought to affect the financial sustainability of pension schemes in Kenya. The study focused on four explanatory variables in particular. However, there are other factors that are likely to influence financial sustainability of pension schemes. Some are controlled by the scheme such as management quality while others are outside the control of management such us unemployment rate and political instability.

The research used quantitative secondary data. The study also ignored qualitative data that could explain other factors that influence the relationship between portfolio mix, liquidity and pension schemes' financial sustainability. Qualitative methods like focus groups, open-ended surveys, and interviews can aid in the development of more definite outcomes.

The study focused on a five-year period (2016 to 2020). It is unclear whether the results will be replicated for an extended period. In order to account for key economic events, the study should have been conducted over a longer period of time.

LITERATURE REVIEW

The chapter examines the theoretical and empirical literature on the factors that influence financial sustainability of pension schemes. It develops a conceptual framework, finishes by critiquing existing research, and elaborates on research gaps on factors influencing financial sustainability of pension schemes.

Theoretical Literature Review

A theoretical framework is a collection of interrelated concepts, like a theory but not necessarily so well worked out. According to Trochim (2006), a theoretical framework enables researchers to know the variables they are supposed to measure and understand the statistical relationships to look for in the context of the problems under study. Theoretical frameworks are critical in deductive, theory-testing sorts of studies. The theoretical framework is a foundation for the parameters, or boundaries, of a study.

Modern Portfolio Theory

The history of modern portfolio management (also known as modern portfolio theory (MPT)), originates with Markowitz (1952, 1959). Stalebrink (2016) reports that Markowitz introduced the Modern Portfolio Theory (MPT) that explores how risk averse investors can construct optimal portfolios taking into consideration the trade-off between market risk and expected returns. The portfolio theory provides a good basis for evaluating the selection and allocation of assets so that it can minimize risks (Njeru, 2014). According to Stalebrink (2016), MPT quantify the diversification benefits and demonstrates how an efficient frontier of efficient portfolios may be formed from a universe of risky assets. Every portfolio on the efficient frontier provides the best potential expected return for a given amount of risk. Investors that hold one of the best portfolios on the efficient frontier are the most successful as they adjust their total market risk which they leverage or de-leverage that portfolio with while taking positions in the risk-free asset such as government bonds. According to Jafarzadeh, Tareghian, Rahbarnia and Ganbari (2015), the assumption of MPT is that investors consider each investment alternative as being represented by a probability distribution of expected returns for a holding period. Secondly, investors maximize one-period expected utility, their utility curves demonstrating the diminishing marginal utility of wealth. Thirdly, investors estimate risk on the basis of variability of expected returns. Finally, investors base decisions solely on expected return and risk, preferring higher returns to lower risk and lower risk for the same level of return.

MPT provides a broad context for understanding the interactions of systematic risk and reward which has profoundly shaped how institutional portfolios are managed thereby motivating the use of passive investment management strategies. Markowitz model is a single-period approach which assumes that an investor has a given initial endowment for investment. Stalebrink (2016) finds that the investment can be held for a specific length of time referred to as the investor's holding period. At the end of that period, the investor can liquidate his holdings either re-investing it or using it for his own consumption needs (or a combination of both) as a fixed mix or a buy-and-hold strategy. Bodie (2015) report that the modern portfolio theory demonstrates that organizations manage their businesses on a portfolio basis. It is therefore important for pension funds to deploy prudent portfolio mix practices in order to instill control within the various portfolios with a target of maximizing returns on each portfolio. MPT is relevant to the study as diversification in investment funds assets can be done to enhance financial sustainability. Knowledge of MPT applies to pension schemes as they seek out efficient combinations of securities that optimize risk and return. According to Bodie (2015), the portfolio is efficient if it offers the highest return for a given level

of risk. Pension schemes are assumed to be risk-averse, who penalizes or demand higher compensation for riskier investments. Therefore, efficient capital markets compensate trustees only for the aggregate market risk, leading them to seek to maximize portfolio diversification that influences the investment strategy. Therefore, it can be argued that MPT was relevant to the present study in guiding pension schemes portfolio mix practice which is hypothesized to influence Kenyan pension schemes financial sustainability.

Transaction Cost Theory

Transaction cost theory (TCT) was developed by Coase (1937). Transaction cost within a firm takes place when the organisation of production cost through the exchanges in the market exchange is higher than within the firm. This means that a firm prefers to carry out activities in-house to avoid costs of transacting with other firms in the market. Transaction costs according to Coase include cost of finding, selling, negotiating, monitoring and dispute resolving ways with other firms in open market transactions. According to Joskow (1988) the main focus of TCT is the definition of the coordination determinants of transactions through markets or hierarchies. According to Williamson (1994) TCT seeks to address why economic transactions are organized in the way they are in modern society. Different firms' economic transactions are internalized within its boundaries while others are procured from external parties. Firms generally internalize activities inside it when there is some form of market failure and especially if that is the source of its intermediate inputs.

Coase argued that market exchange is not costless as it included costs of information, negotiation, monitoring, coordination and contract enforcement (Kerallah& Kirsten, 2002; Klein, 1999). Schneider and Doner (2000) state that NIE lays emphasis on the potential costliness of transactions and note that Williamson focuses on specifying the costs of transactions, the factors that increase these costs and the institutional responses to such costs. They also note that transactions involve costs because they typically require agents to search for partners, bargain with them and enforce and monitor any agreement. It is these costs, they explain, that generate market imperfections, lead to market failure and generate demand for institutions to redress them.

Coase (1992) notes the need to specify the institutional setting within which the trading takes place, since this affects the incentives to produce and the costs of transacting. Williamson (1979) analyzed situations whereby the cost of integration discourages integration but firms choose not to revert to spot transactions but instead chose another form of governance. Klein (1999) explains that TCE represents another approach to studying institutional arrangements with the emphasis being on governing transactions.

In this study, transaction costs were examined in terms of the economic benefits to pension schemes and this was done in the context of their institutional framework. This enabled an examination on how transactions costs and thus economic benefits, relate to the institutional framework within which pension schemes operate. The Transaction-Cost Economic (TCE) theory was instrumental in examining the rationale behind pension scheme engagement and economic benefits derived from this engagement.

Liquidity Preference Theory

The liquidity preference theory was formulated by Keynes (1936) and it laid a foundation for liquidity management. In this theory, Keynes argues that holding all other factors constant, investors will have a preference for liquid investments as opposed to illiquid investments and will seek a premium for investments that will take longer to mature. Liquidity is the expediency of holding cash. An individual or firm will hold money for various reasons at a given time (Bitrus, 2011). Based on the theory, firms hold cash or inventory to meet their transaction, speculative, precaution, and compensation motives. The transaction motive involves the firm's need to hold cash or money for purposes of meeting current transactions for business exchanges. Firms need to hold cash so as to be able to pay for current needs such as transport, raw materials, wages among others. Precautionary motive is whereby firms have to keep cash as security for unanticipated emergencies. Any given firm will set aside some money to manage hardships or to benefit from unforeseen deals. Speculative motive is whereby firms maintain assets in liquid form to benefit from prospective adjustments in the interest rates or bond prices (Pandey, 1997).

Keynes liquidity preference theory has been criticized for holding that interest is the reward for parting with liquidity. That is the higher the liquidity preference, the higher the rate of interest and the lower the liquidity preference, the lower the rate of interest. During depression, people have a high liquidity preference but the rate of interest is extremely low. In times of inflation people have low liquidity preference but the rate of interest is very high. These facts go against Keynes's theory. This is because Keynes did not take the income level into account. The modern determinate theory can explain this fact satisfactorily (Gill et al., 2010). Further, Keynes assumes that the choice is always between liquid cash and illiquid bonds. This theory is, therefore, an 'all or nothing' theory. In reality, there are various types of investable assets varying in degrees of liquidity (Stewart, 2011). Keynesian liquidity preference theory was relevant for this study since the necessity of liquidity to facilitate daily activities of a firm cannot be ignored. Managers of pension schemes ought to maintain liquidity at levels that enhance achievement of the firm's objective which is to maximize shareholder wealth by enhancing financial sustainability. Too much liquidity however comes with lost investments and therefore firms have to ensure they minimize the total cost of liquidity and cost of illiquidity, liquidity management objective being enhancing financial sustainability.

Systems Theory

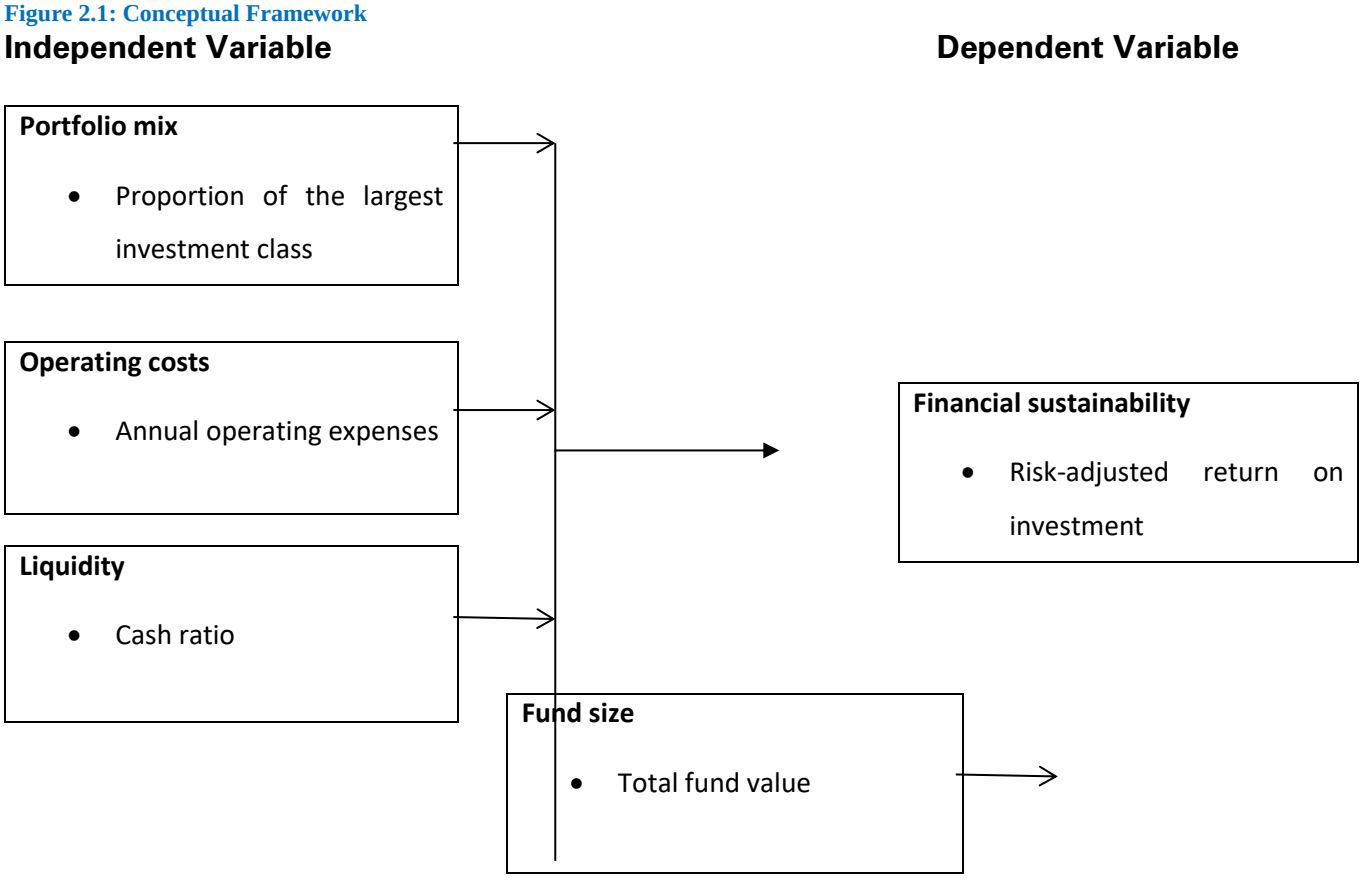
This theory, which is also appropriately referred to as the general system theory, was founded by Ludwig von Bertalanffy in 1950 to address the general principles of dynamic interaction of organizations. The theory states that every organization that produces output is a system of sorts (Ludwig von ,1950). Thus organizations, including pension schemes, regardless of their size and purpose, and the management perspective adopted, were basically concerned with relationships, structures and interdependence rather than just constant attributes (Oso 2009). The systems theory approach indicated that there are always inputs – conversion – outputs process (Jayeoba,2013). There were sub-systems which were interrelated with one another and the surrounding environment and all work as a whole unit (Mele, Pels & Polese, 2010).

Pension schemes are organizations with input conversion- output conversion processes where the input include contributions from members and the sponsoring companies, the conversion is the investment of the assets while the output is the amount of financial returns received by the Pension Schemes (Zamuee,2015). The occupational pension schemes were actually entities with sub-systems, with the members, sponsoring companies, trustees, service providers as the sub-systems. This thesis was about firm specific factors and financial sustainability of pension schemes. It therefore assessed the effectiveness of the size of a fund in enhancing financial sustainability of a pension scheme. This study was modeled on the postulates of systems theory since pension schemes, like other organizations, are always in constant exchange with the larger society. The study sought the synergy that arises from the size of a fund as they engage their professional services to a particular entity and for the ultimate good of both the sponsors and the members of the pension schemes.

Conceptual Framework

A conceptual framework is made up of variables. According to Kombo and Tromp (2006), conceptual framework is an instrument that is utilized to develop awareness and understanding of the condition under examination and to clearly communicate. The framework underscores how variables relate with each other or could be made to interact under conditions that can be influenced. The key variables in this study will be categorized as independent and dependent variables. Independent variables are predictor variables because they predict the amount of changes that occurs in a different variable (Mugenda& Mugenda, 2012). Dependent variable is a variable that is changed by another variable.

Figure 2.1: Conceptual Framework



Factors affecting financial sustainability were the independent variables. The proportion of the largest investment class to total investments was used to assess portfolio mix. The annual total operating expenses were used to determine operating costs. The cash ratio was used to calculate liquidity. The total fund value was used to determine the size of the fund. The dependent variable was financial sustainability, which was determined by risk-adjusted return on investment. To guide the study, the interrelationship between variables discussed above was presented in the conceptual framework model shown in Fig. 2.1.

Empirical Literature Review

The factors influencing the financial sustainability of pension schemes have been the subject of controversy and debates. "Scholars have conducted comprehensive research on this subject and found mixed results: some found that some factors have a positive influence, whereas others found a negative correlation, and still others found no relationship at all.

Portfolio Mix and Financial Sustainability of Pension Schemes

Mutula (2018) did a study on the determinants influencing pension fund investment sustainability in Kenya. Diversification decisions, management competency, investment methods, and regulatory compliance all have a positive as well as substantial relationship with pension fund investment sustainability, according to the research. Based on the findings, the study recommended that pension funds management should be composed of people with high managerial competence. Further, the study recommended that pension funds should incorporate investment literacy and capability programs in their organizations. Additionally, the study recommended that pension funds should continue adhering to the set regulations. The study had very strong and comprehensive recommendations on investment management matters for pension funds but did not investigate the influence of portfolio mix on financial sustainability of pension schemes.

Sau and Njeru (2018) did a study on determinants of financial growth of occupational retirement benefits scheme in Kenya. The study found out that investment strategy, members' contribution, and regulatory framework were key determinants of financial growth of occupational retirement schemes in Kenya.

The three determinants were discovered to possess positive as well as substantial link with occupational retirement scheme financial growth. The researchresolved that investment strategies employed by the schemes have the potential to enhance financial efficiency and generate high returns in the pension fund. Members' contributions were also a found to be a major determinant of financial growth of retirement benefits. The study recommended that assets and members' contributions should be invested more productively to generate returns for the pensioners but failed to demonstrate how portfolio mix influenced Kenyan pension schemes' financial sustainability.

Namusonge, Sakwa, and Gathogo (2017) researched on the impact of asset mix on the financial sustainability of registered occupational pension systems in Kenya. The asset mix has a huge impact on the financial sustainability of occupational pension systems, according to the report. According to the result of the research, the independent variable (asset mix) explained 66.1 percent of the difference in the financial sustainability of pension schemes.This research provided a significant contribution to the understanding of the impact of asset mix on the financial sustainability of Kenyan pension systems.

Muia (2015) conducted research on the impact of asset allocation on the financial sustainability of Kenyan pension funds, finding that about 82.7 percent of the independent variables of the various asset classes justified the financial sustainability of the pension funds. The research resolved that there is a linear correlation between investment returns and the returns of the various asset classes with the strongest correlation being between fund sustainability and returns from offshore investments and government securities. The balance of about 17.3% was attributed to other factors such as the manager's selection, the timing of investments and securities selection within an asset class and whether the manager adopts an active style of management of the fund. The study had a sample of only 20 schemes which might not be adequate for robust regression analysis.

Kiplagat (2014) researched the impact of asset allocation on the Kenyan pension schemes financial sustainability. The research discovered that there is a linear correlation between fund sustainability and the weights of asset classes with the strongest correlation being between fund sustainability and asset weights of cash deposits, quoted shares, Government securities, and property. The study further established that 58% of the variability among fund sustainability is due to policy differences in the asset allocation of the various funds. The balance of about 42% is due to other factors such as the manager's selection, the timing of investments and securities selection within an asset class and whether the manager adopts an active style of management of the fund. However, this was a case study as opposed to the whole industry analysis which did not look at the factors contributing to financial sustainability.

Ondieki (2017). examine the effect of retirement funds characteristics on the financial performance of pension schemes in Kenya. Specifically, the study sought to establish the relationship between asset allocation, fund size, fund design plans and the social coverage span. The relationship was proposed to be moderated by the retirement benefits act regulations. This study used a descriptive study design. The population comprised of all the 1342 registered pension schemes and a purposive sampling was conducted to select schemes that have been consisted for the last ten years. 31 schemes were selected which had consistent data for the past 10years. Secondary data used which was sourced from the Retirement Benefit Authority and the company's websites and the results presented using SPSS version 24. The study findings were presented in tables for easy interpretation. The results showed that asset allocation, had an insignificant impact on the financial sustainability of the pension schemes

Operating Costs and Financial Sustainability of Pension Schemes

Muriithi (2017) looked into the impact of running costs on the financial performance of Kenyan occupational pension systems. The study's goal was to see how running costs affect the financial performance of Kenyan occupational pension systems. The study found a strong relationship between financial performance and investment management cost as well as an administrative cost which lowered retirement income since the expenses is paid from the pension funds. The study recommended that trustees and authorities should monitor and regulate the operating cost incurred by the pension schemes respectively. The study failed to take into account financial sustainability.
In their study on the analysis of the financial returns of registered individual retirement schemes in Kenya, Gakure and Gakera (2015) focused on determining their influence of market volatility, risk control policy, good governance among others on the financial sustainability of individual pension schemes. A descriptive survey was used in their study. The sample population consisted of 30 different pension schemes. Thus, the study used census since the population size was small. The research analyzed both primary as well as secondary data. The research resolved good governance had strong influence on individual pension schemes financial sustainability.It was strongly suggested that Kenya enhance its policy and regulatory frameworks for individual pension systems. This research was unable to determine the impact of running costs on the financial sustainability of Kenyan pension plans.

A study by Mutuku (2014) on the trends and challenges of pension schemes asserted that some the challenges that the pension industry in Kenya face include high charges by the service providers, inadequate returns, ability to meet pension promise requirements. According to the study, high costs of administration normally lead to low benefits upon retirement for those retiring and low annual rates of return to members. This is especially so with defined contribution schemes since their expenses were paid from the pension funds. The operating costs increase further as there were no standard rates recommended by the authorities to be applied by the service providers. Such operating costs and other expenses pose a risk to the pension payouts. The study challenged the pension industry regulators to come up with standard guidelines of rates chargeable by the service providers such as administrators and investment teams for the services rendered. The study however did not establish the effect of operating costs on financial sustainability of pension funds.

Murithi (2017) study intended to explore the effect of operating costs on pension schemes which consist of administrative and investment costs which can substantially increase the cost of retirement security. This study therefore was motivated by the fact that trustees of the pension funds need to understand the impact of the operating costs on financial performance in Kenya. To meet the objectives of the study, a case study method was used. The study mainly used secondary data from 164 pension schemes for the past 3 years. The study established a weak association between operating costs and the financial sustainability of pension firms in Kenya.

Njuguna (2012) examined the relationship between the financial returns of Pension Schemes and the agency costs. In particular, the paper investigated “the determinants of Pension Fund efficiency, agency costs were some of the factors”. According to the study, agency costs comprise the costs

paid to service providers as well as the Trustees allowance. The paper sampled and analyzed, using Data Envelopment Analysis (DEA) approach, 749 pension schemes which were in operation between 2001 up to 2008. The study concluded that there is a significant influence of agency cost on operational costs and thus on the financial returns of the Pension Schemes. In the absence of operational efficiency, money meant to benefit members goes to other unintended beneficiaries. The study focused on the moderating effect of operational cost without taking into account its direct effect on financial sustainability.

A study by Ng'etich (2012) investigated the factors that influence the growth of individual Pension Schemes in Kenya. According to this study, Pension Fund governance is measured by the use of board composition, the trustees training as well as the financial expertise brought in by the trustees. One of the findings of this paper about governance is the conflict of the interest on the part of the sponsor who happens to be the Trustees' employer, at the same time is a decision maker as far as deciding the contribution rates of employees is concerned. Such a case waters down the Pension Schemes' independence, thereby curtailing the operational costs of Pension Schemes. The paper recommended that since such a conflict of interest cannot cease completely, it should be reduced to manageable levels. It was noted that a reduction in the conflict of interest enhanced cost efficiency as well as improving the financial performance of the Pension Schemes. The study focused on growth which is a different concept from financial sustainability.

Liquidity and Financial Sustainability of Pension Schemes

Were, Iravo and Wanjala (2017) focused on pension schemes financial sustainability determinants. Financial sustainability being dependent variable whereas the independent variables of the study were liquidity, firm size, retained earnings and leverage. The target population was 818 registered occupational pension schemes in Kenya by the Retirement Benefits Authority by the end of the year 2016. A sample size of 261 Pension schemes were selected through random sampling method since the population was heterogeneous. The financial ratios were used to measure productivity, liquidity, profitability, fixed assets sustainability among others. Liquidity has a positive though not statistical substantial impact on financial sustainability, according to the research. The study considered a short study period of 1 year that might not be adequate to make generalizations.

In the United States, Canada, and the Netherlands, Boon, Briere, and Rigot (2017) evaluated the impact of regulatory considerations and pension scheme characteristics on hazardous asset allocation. The study looked at 600 pension plans and collected data from 1992 to 2011. Risky assets were the dependent variables, which were divided into three categories: equities, risky fixed income, as well as options. The variables were measured in terms of the annual percentage of the total pension scheme asset value invested in each of the risky asset groups. The study found that pension scheme size and liquidity influenced risky asset investment. However, the regulatory requirement of mark-to-market and risk-based capital requirements had a greater influence on allocation to risky assets than pension scheme size and liquidity. Nevertheless, the direct impact of liquidity on the financial success of pension plans has yet to be proved.

By regulating the retirement benefits business, Owinyo (2017) performed effect research on the economic results of occupational pension systems in Kenya. The research set out to explore whether regulatory enactment had an important effect on retirement schemes' economic sustainability. A sample of thirty occupational pension benefit systems from information collected from scheme administrators was chosen. The total contributions and fund values for each sample plan were evaluated for each of the five years preceding and five years post-2000. Using the matched or paired ttest, results suggested that the economic sustainability of the occupational pension benefit schemes population during the period during which the laws were in place had an important beneficial effect. The study did not establish the effect of liquidity on financial sustainability of pension schemes in Kenya.

Bloomfield, Gerakos and Kovrijnykh (2015) estimated the rate of firm-level conversion of working capital accruals into future cash flows. The anticipated cash value of a dollar of working capital accruals is determined by these conversion rates. The study finds that a one-dollar innovation to accruals translates into 95 cents of cash flow in the following fiscal year for firms whose accrual innovations reverse within one year. The research also finds that the relationship between the accruals of working capital and annual returns improves with the speed at which accrual innovations convert to cash flows. In addition, companies are less likely to receive an Accounting and Auditing Enforcement Release when accrual innovations convert faster and fully to cash flows. The study focused on a different context.

Osano (2013) did a study with an objective of seeking to identify investment strategies adopted by investment funds in Kenya and how they affect the financial sustainability of the funds. The population of study was all investment funds in Kenya. Primary data was collected through personal interview by use of interview guide to a total of ten investment managers. Secondary data was also collected from respective investment funds financial reports for the year 2012. Descriptive analysis was used and classified them either active investment strategy or passive investment strategy. From inferential statistics, a positive relationship was established between ROA and investment strategy, Leverage, Liquidity, age and size. Chi square test results showed that companies with high liquidity can be said to be better performing as compared to those without or with lower liquidity. However, the study focused on investment funds in Kenya which are different from pension schemes.

Fund Size and Financial Sustainability of Pension Schemes

Ichingwa and Mbithi (2017) studied influence of total contribution on the financial sustainability of Kenyan pension systems. According to the Retirement Benefits Authority report, there were 818 registered occupational pension systems in Kenya at the end of 2016. Random sampling method was applied to come up with the sample size of 261 registered occupational retirement benefits schemes. Secondary data was employed in the study, which was evaluated by inferential as well as descriptive statistics. Total contribution has a positive, substantial effect on the financial success of pension schemes, according to the conclusion of the research. The research suggested Pension Schemes in Kenya should invest more in systems to recruit more members to increase the total contributions as it positively affects financial sustainability. The study collected data for 2016 only which might not be adequate representation of the financial sustainability over time.

Sabugo (2017) carried out a study on the determinants of investment income growth in the Tanzanian social security schemes. The study aimed at assessing the determinants of investment income growth in the Tanzanian social security schemes. The study used various methodologies to undertake the study for instance, the study used aggregate secondary data from the year 2005/06 to 2016/17. Data were collected through documentary review method and analyzed using regression analysis method. Based on the empirical evidence from this study, findings showed that growth of investment income in social security schemes is positively affected by member contributions, benefits payment and value of social security schemes. The study recommended that, social security schemes should increase coverage into informal sector, increase member registration, improve benefit packages and invest contributions of members into more productive investments to facilitate investment income growth. The study focused on investment income growth which is a different concept from financial sustainability.

Kigen (2016) analyzed the effect of fund size on the financial returns of pension funds in Kenya. The study operationalized fund size into the size (number) of members, the retirement age of members, costs and the members' density contributions. A sample size of 93 registered pension schemes was selected through purposive sampling from a population of 1232 registered pension schemes. The data collected ranged from year 2011 up to 2015.The data collected was analyzed using random effect model and the correlational analysis. The study found a weak relationship between pension contribution and their financial returns. The study thus recommended the need to develop new contribution models that would enhance more collection of funds for investment.

Tijjani (2014) did a study on the determinants of financial sustainability of pension fund administrators in Nigeria. The study findings revealed that the age, size, net income, contribution, and board size are positive revealing a strongly significant positive relationship respectively. The study recommended that financial sustainability needed to be ensured and monitored throughout the lifetime of PFAs. Tijjan (2014) recommended that swift actions should be monitored to remedying possible weakness in the Pension Funds Administrators adding that more efforts to increase contributions should be made. However, the study focused on financial sustainability which is a different concept from financial sustainability.

Oluoch (2013) did a study on the determinants of financial sustainability of pension funds in Kenya. The purpose of this study was to establish the determinants of sustainability of pension funds in Kenya. The study was done on Kenyan pension funds at aggregate level using annual data on fund value, assets, age, contributions and returns. The data was from between 2000 through 2012. Time series regression analysis was used. The study found a strong positive relationship between ages of the investors measured by national life expectancy of Kenya indicating that a longer life expectation positively affected returns. However, weak positive relationships between returns and fund value, assets and contributions of pensioners was weak which indicated that fund values, assets, and contributions were not utilized in the generation of income for the pension funds in Kenya. The study recommended that the pension funds should put the contributions of pensioners to more productive investments other that just keeping the funds safely for the pensioners. The study finding on contributions is in conflict with other studies.

Critique of Existing Literature

In view of the empirical literature examined on pension schemes, this section provided a critique in terms of titles, methodologies, samples collected, populations of interest and even the findings of those studies. A study by Gakure and Gakera (2015) on the financial sustainability of registered individual retirement schemes in Kenya, focused on determining the influence of market volatility, risk control policy, good governance and low coverage of contributors on the financial returns of individual pension schemes. Their research adopted a descriptive survey. The study sampled 30 individual pension schemes. However, given that there were over 1300 registered pension schemes, according to RBA 2020,30 units was not a good representation of the entire population. Occupational pension schemes were about 1232 units. These were more representative units for analysis of such a study. The study should have considered more units in order to make a better conclusion. Again, individual pension schemes were funded by individuals who pay according to their ability to pay. Occupational pension schemes were financed by the members and the sponsoring companies. Such funding differences could have a difference in the effect of financial sustainability."

Ng'etich (2012) who investigated the factors that influence the growth of individual Pension Schemes in Kenya should have dealt with a bigger and more representative category in the pension industry such as the occupational pension schemes. A target a population of 22 registered individual Pension Schemes is too low for a generalization to be made. The study used measures such as board composition, the trustees training as well as the financial expertise brought in by the trustees. Important drivers of pension schemes financial sustainability such as asset mix, operating costs, fund size and liquidity were left out.

The study by Muriithi (2017) on the effect of operation costs on the financial sustainability of pension schemes covered all of them. There were funded and unfunded pension schemes and the effects of the operating costs were felt differently by different categories of pension schemes. Thus studies should have been conducted according to the categories in the pension industry. The established a weak association between operating costs and pension performance. Mutuku (2014) examined the trends and challenges of pension schemes that the pension industry in Kenya faces. Some of the challenges highlighted included high charges by the service providers, inadequate returns, and ability to meet pension promise requirements. The study did not differentiate the various classes of pension schemes in the pension industry. Each category of pension schemes has funding and management structure different from other classes. Such differences create different cost implications and financial sustainability on each class of pension scheme.

The study by Kigen (2016) on the effect of fund size on the financial returns of pension funds in Kenya talked on only one independent variable, namely the sizes of the pension schemes. The study left out other independent variables such as operational costs, portfolio mix, liquidity as well as which have bigger effect on the financial sustainability of pension schemes. Again, the study did not identify the various categories of pension schemes in the pension industry which include NSSF, Occupational Pension Schemes and the individual pension schemes. Each category has a different kind of administrative and funding structures.

In the study by Were etal. (2017) on the determinants of financial sustainabilityof pension schemes, the objective was to analyze the determinants of financial sustainability of pension schemes in Kenya. The independent variables of the study were capital, firm size, retained earnings and leverage were few than the conventional determinants of financial sustainability of pension schemes. The study did not indicate the period when the study and if it was 2016, one year period was not adequate for the study.

Research Gap

According to studies done by Oluoch (2013); Tijjani (2014), size of pension funds and member contributions have positive impact on the growth of investment income and that fund value, and benefit payments do not have significant impact on investment income. The findings from these studies however contradicts from the findings from the studies done by Muia (2015); Shola (2013) on investment sustainability which found that member contributions, value of pension funds and benefits payment are the significant determinant of the growth of investment income. This demonstrates a conceptual research gap in this study area.

Further,from the empirical literature examined in this review indicate that majority of studies focused on individual pension schemes which had populations of around 30 units (Gakure&Gakera,2015;Ng'etich,2014;Muriithi, 2017;Mutuku,2014).The studies thus did not tackle the occupational pension schemes in the pension industry. Areas covered by the studies included corporate governance, growth and trends and challenges (Ng'etich,2014; Njuguna,2012; Mutuku,2014). Only few studies covered the financial sustainability, but it was in respect to individual pension schemes. Since no studies have been done on portfolio mix, operating costs, liquidity, and fund size as determinants of financial sustainability of pension schemes in Kenya, there is a literature gap as far as pension schemes are concerned.

As the empirical studies reviewed above show, a study on the relationship between portfolio mix, operating costs, liquidity, and fund size with the financial sustainability of pension schemes is critical. This is because the existing studies have either not focused on this relationship or has conceptualized variables differently and the results are based on the proxies used. Further, the existing studies have related portfolio mix, operating costs, liquidity, and fund size with other variables that are different from financial sustainability of the pension schemes in Kenya. As a result of this research gap, the current study will investigate the effect of portfolio mix, operating costs, liquidity, and fund size on the financial sustainability of pension schemes in Kenya. As a consequence, the goal of this study was to see how portfolio mix, operating costs, liquidity, and fund size affect the financial sustainability of Kenyan pension schemes.

RESEARCH METHODOLOGY

Methods and procedure which was applied to accomplish the objectives of this research are laid out in this chapter. This methodology entails identifying the research design applied, the population which was studied, the data used, the data collection technique utilized, as well as the process for analyzing the collected data.

Research Design

Research design is a blueprint that guides the research process, from the formulation of the research questions and hypotheses to reporting the research findings (Sekaran & Bougie, 2011). Descriptive research design will be employed in this study. Descriptive research design can either be observational, case study or survey method. The observational method involves directly observing a case scenario so as to obtain information. The case study method involves observing individuals or a particular scenario in detail which is often testable for hypotheses. The survey method consists of asking the people involved in the study questions, often in written form, to obtain information. This research specifically will use a descriptive research design.

According to Akonga (2014), descriptive research entails collecting data to enable the researcher to collect data on the topic of study. The researchwas focused on determination of the effect of portfolio mix, operating costs, liquidity, and fund size on the financial sustainability of pension schemes in Kenya. Descriptive research describes the various phenomenon of interest from multiple perspectives. The descriptive survey method was preferred because it would ensure a complete description of the situation, making sure that there is minimum bias in collecting data. Descriptive design also helps one understand the characteristics of a group in a given situation and assists in systematic thinking about aspects of a given situation.

Target Population

The total population is the whole spectrum of an interest system or process. The research can be generalized to the world of individuals (Sekaran & Bougie, 2011). The target population of the study was all the 1340 registered pension schemes in Kenya. The duration of the research ranged from 2016-2020, and data was collected for this period. The population distribution is as shown in Table 3.1

Table 3.1 Population Distribution

Classification of pension scheme	Population
Occupational pension schemes	1258
Individual and umbrella schemes	82
TOTAL	**1340**

Source: RBA (2021)

Sample Frame

A sampling frame is a listing of the accessible population from which the sample is drawn. According to Kombo and Tromp (2006) sampling frame is the actual set of units from which a

sample has been drawn. The sampling frame of this study was all the 1340 registered pension schemes in Kenya.

Sample Size and Sampling Technique

Sampling is defined as choosing units from a population. Sampling technique is the method that is used to select the sample (Creswell & Creswell, 2017). This study used stratified random sampling as this technique allows the researcher to divide the sample into appropriate strata that are mutually exclusive. The population was divided according into two strata's namely occupational pension scheme and individual retirement schemes. Cooper and Schindler (2014) stated that the method involves the subdivision of the research population into independent sub groups and obtaining the simple random sample for every sub group.

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

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

Where:

n = sample size

N = population size

e = the level of precision

1 = Constant

$$n = 1340/\ 1+ 1340(0.1)^2$$
$$= 93.05 \approx 93 \text{ pension schemes}$$

Substituting these values in the above equation gave 93pension schemes that wereused as the sample size for the current study. The sample size was as shown in Table 3.2

Table 3.2: Sample Size

Classification of Scheme	Population	Sample Size
Occupational pension schemes	1258	87
Individual and umbrella schemes	826	
TOTAL	**1340**	**93**

Source: RBA (2021)

Data Collection Instruments

Data collection refers to the process and methods used to gather data and measure information on variables in an established, systematic way to answer stated research questions. Data can be collected from either primary or secondary sources. This study used secondary data. The data collection instrument was a secondary data collection schedule that captured the various variables for a period of five years. Every year, RBA requires all registered pension schemes to disclose their financial reports publicly. Secondary data was collected for each variable; portfolio mix, operating

costs, liquidity, fund size and financial sustainability. The researcher collected data for each attribute from the financial reports of the 93selected pension schemes for the five years between 2016 and 2020.

Data Collection Procedures

Polit and Beck (2010) indicate that secondary analysis of existing data is efficient and economical because data collection is typically the most time-consuming and expensive part of a research project. Secondary data for each of the variables (portfolio mix, operating costs, liquidity, fund size and financial sustainability) was collected. The procedure for collection involved obtaining the financial statements from the RBA reports and individual pension schemes reports by the researcher. The data was then inputted in an Excel program and arranged depending on the various study variables. The data was run and analyzed quantitatively using STATA. The pension schemes were supposed to have published accounts for five years, that is, from 2016 to 2020.

Pilot Test

A pilot study is a small scale preliminary study before the main research in order to measure the validity and reliability of data collection instruments. All components of the data collection were checked to ensure clarity of information and accuracy in relation to specific research questions. The pilot was done using all the schemes registered with RBA whose data was collected.

Data Analysis and Presentation

This section is composed of four steps: data preparation through cleaning, data analysis, interpretation and report writing. Microsoft Excel in combination with STATA statistical packages were used to analyze the data. This research employed both descriptive and inferential statistics to analyze the data collected. Mugenda and Mugenda (2012) argue that descriptive statistics allows the researcher to get a meaningful description of scores and measurements for the study using few indices or statistics. Descriptive statistics were used in describing the data. Descriptive statistics used included frequency distributions and measures of central tendency (mean and standard deviation). Inferential statistics were used to examine the causal relationships between portfolio mix, operating costs, liquidity, and fund size on the financial sustainability of pension schemes in Kenya. The analyzed data was presented in the form of tabulations, percentages, mean and standard deviation.

Analytical Model

To test the relationship between study variables, a regression model was used:

$$Y_{it} = \beta_o + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon \quad \text{(i)}$$

Representing; $Y = f(X_1, X_2, X_3, X_4)$

Y = Dependent variable was financial sustainability of pension schemes in Kenya (Measured using Risk-adjusted return on investment).
X_1.....X_4 =Represents the independent variables representing the determinants of financial sustainability of pension schemes in Kenya.
β = is the beta.
ε = error term

The below empirical model was applied in testing the association amongst the selected independent variables and the financial sustainability of pension schemes in Kenya.

$$Y_{it} = \beta_o + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \varepsilon \quad \text{(ii)}$$

Where:

Y_{it}	=	Financial sustainability for firm i in period t
β_0	=	Constant
X_{1it}	=	Portfolio mix measured by the large proportion of investment class
X_{2it}	=	Operating costs measured by natural log of total operating cost
X_{3it}	=	Liquidity measured by current assets / current liabilities
X_{4it}	=	Fund size measured by natural log of the total fund size
ε_{it}	=	the error term
$\beta_1, \beta_2, \beta_3, \beta_4$	=	Regression Coefficients for Independent Variables representing the determinants of financial sustainability of pension schemes in Kenya.

DiagnosticTests/Pre-testing for Multiple Regression Assumptions

Statistical research depends on precise suppositions concerning the concepts adopted in the scrutinization. Where the suppositions are not met, the findings may not be reliable leading to type1 error (false positive) or type 2 error (false negative). Type 1 errors occur when the null proposition is true but it is rejected. It occurs when a researcher validates a statistically significant difference even though there is none. Type 2 error occurs when the null proposition is untrue and the researcher successively neglects to declines it (Sekaran & Bougie, 2010).

Two assumption of regression exists: assumptions prone to violation and those, which are not prone to violation. This study addressed assumptions of multiple regression that are not prone to violation. Data analytic assessments such as normalcy, multicollinearity and uniformity were undertaken to test for statistical assumptions and determine whether the data was correctly demonstrated.

NormalityTests

Normalcy assessment was undertaken to conclude if a dataset was correctly displayed by a normal spreading and to determine how possible it is for an unsystematic variable core to the dataset to be typically spread (Sekaran & Bougie, 2010). Test of normality is key in research because if the presumptions are false, it is difficult to deduct correct inferences from the data. This study adopted the Shapiro-Wilks test for normality to detect any departure from normality. This is because it is

the most powerful tool to detect normality variance. Outliers were removed to reduce measurement errors.

A test will fail the assumption of normalcy if the p-value is below 0.05. Flopping the normalcy assessment permits the scholar to affirm with 95% assurance that the information fails a standard dispersal. Passing the normalcy assessment permits the researcher to affirm that no deviation from normalcy was established on the data.

Multicollinearity Test

Multicollinearity is defined as situations where the independent variables are greatly related. Where two or more independent variables are related, it leads to collapse of the regression model since both variables must be dropped from the model (Creswell & Creswell, 2017). This research adopted the Variance Inflation Factor (VIF) to establish the multicollinearity.

Where multicollinearity is present in a set of data, the confidence interval for coefficients is usually very wide and the t-statistics is usually very small. The presence of multicollinearity between predictor variables can adversely affect the regression results of a study. A common understanding is that the VIF should be range 1-10. VIF of more than 10 indicates that there is high correlation.

Test of Homogeneity Variance

The assumptions of homogeneousness of variance are the supposition of the predictor samples t-test and Analysis of Variance (ANOVA) asserting that all assessment groups have the same group. The independent samples t-test and ANOVA use the *t* and *F* statistics correspondingly, which are usually sensitive to violation of the assumptions provided the unit amounts are equivalent (Cooper & Schindler, 2014).

Various numerical tests are used to test for homogeneousness of variance. These checks comprise. Hartley's F_{max}, Cochran's, Levene's and Barlett's test. Some of these tests over time have been established to be very delicate to non-normalcy and therefore not commonly used. Levene's test is the best collective valuation for homogeneousness of variance. It makes use of the *F* test to assess the null supposition that the discrepancy is equivalent across groups. A *p* value of less than 0.05 shows a deviation of the supposition (Cooper & Schindler, 2014).

The linear regression model supposes that the error term is homoscedastic i.e., it has a constant variance. According to (Keith, 2015), there should be equal variance of errors across all levels of the predictor (independent) variables. It is therefore assumed that the errors are spread out evenly or consistently across the variables of the study. If error variance is not constant, this means there is heteroscedasticity in the data and this may lead to misrepresentation of outcomes that deteriorate the general exploration and the numerical command of the scrutiny. This leads to erroneous and biased results. (ANOVA) was used to test for homoscedasticity of the residuals.

RESEARCH FINDINGS AND DISCUSSION

This chapter set out to examine the data gathered so as to determine the effect of firm specific factors on the financial sustainability of pension schemes in Kenya. The discoveries were represented in tables using regression analysis, correlation and descriptive statistics, as demonstrated in the following sections.

Descriptive Analysis

The objective of this study was to establish the effect of firm specific factors on financial sustainability of pension schemes in Kenya. The study utilized a descriptive design while population was the 1340 pension schemes in Kenya. The sample size was 93 obtained using Yamane formula. Data was obtained from 93 of the pension schemes giving a response rate of 100% which was considered adequate. The study relied on secondary data, which was obtained from RBA reports and individual schemes annual reports. The independent variables were portfolio mix, liquidity, fund size and operating costs. The results are discussed in this section. For all of the pension schemes in Kenya whose data was available for the research, STATA was used to examine the variables across a five-year period (2016 to 2020). The descriptive statistics of the variables of the study are given in the following table.

Table 4.1: Descriptive Statistics

	Mean		Std. Deviation	Variance
	Statistic	Std. Error	Statistic	Statistic
ROI	13.0509	.12112	1.16804	1.364
Portfolio mix	.44346	.024596	.237198	.056
Liquidity	5.81465	.795625	7.672731	58.871
Fund Size	15.4711	.14772	1.42454	2.029
Operating costs	10.9445	.10651	1.02719	1.055
Valid N (listwise)				

Diagnostic Tests

Diagnostic tests were run before performing the regression model. This research centers on the diagnostic tests used in connection to the present investigation, including the Stationarity testing, autocorrelation test, multivariate collinearity, normality test and heteroskedasticity test.

Multicollinearity Test

In statistics, Multicollinearity is the situation in which several predictor variables are strongly linked. Strong correlations between independent variables exaggerate the impact on the dependent variable. Perfect Multicollinearity occurs when there is more than one linear relationship between a number of variables.

Table 4.2: Multicollinearity Test for Tolerance and VIF

	Collinearity Statistics	
Variable	**Tolerance**	**VIF**
Portfolio mix	0.616	1.966
Operating costs	0.413	3.203
Fund size	0.402	3.632
Liquidity	0.606	1.315

The data was subjected to a Multicollinearity test. The VIF values were combined with the variable's Tolerance. Multicollinearity is present when the tolerance value is less than 0.2 and the VIF value is more than 10. There was no Multicollinearity, as indicated by a tolerance value of above 0.2 and a VIF value of less than 10.

Normality Test

Tests of Kolmogorov-Smirnov and Shapiro-Wilk were utilized to determine normalcy. The alternative hypotheses and null hypotheses are listed below.

H_0: the secondary data was normally distributed.

H_1 the secondary data was not normally distributed

A p-value of 0.05 or above would indicate that the null hypothesis should not be rejected, whereas a p-value of less than 0.05 means the null hypothesis should be rejected. Below, you'll find a summary of the results, shown in table 4.3.

Table 4.3: Normality Test

	Kolmogorov-Smirnov[a]		Shapiro-Wilk	
	Statistic	Sig.	Statistic	Sig.
ROI	.084	.112	.982	.230
Fund size	.187	.060	.845	.140
Portfolio mix	.084	.099	.961	.072
Liquidity	.245	.080	.742	.340
OE	.140	.090	.921	.082

The study used Shapiro Wilk test to determine normality of the variables. The reason why Shapiro Wilk test was preferred is because the sample size for the study fell within the range of zero and 2,000 (Garson, 2012). It was found, as indicated on Table 4.3, that the variables' data (financial sustainability, portfolio mix, liquidity, fund size and operating costs) showed p >0.05, which meant that the null hypothesis on normality test hypothesis was not rejected and the data was therefore normally distributed (Pallant, 2007).

Heteroskedasticity Test

Cross-sectional units tend to exhibit homoscedastic error processes; however, unit-specific variances are more common and are referred to as group-wise heteroskedasticity. The command

with the heftiest weight is used in computing the Breuch Pagan group wise Heteroskedasticity when residuals are utilized.

Table 4.4: Heteroskedasticity Test

Modified Wald test for group wise heteroskedasticity
H0: sigma(i)^2 = sigma^2 for all i
chi2 (430) = 320.28
Prob>chi2 = 0.1125

Modified Wald test was used to test for heteroskedasticity. The null hypothesis tested is that, error terms have a constant variance (that is should be Homoskedastic). The results in Table 4.4 indicate that, the error terms are heteroskedastic given that, the p-value (financial sustainability = 0.1125>0.05) confirmed that the null hypothesis of constant variance was not rejected therefore, justifying the absence of heteroskedasticity in the data as indicated by Poi and Wiggins (2001)

Autocorrelation Test

The researcher was concerned that the introduction of serial correlation into their model would cause inaccurate results and carried a test to detect this kind of serial correlation, the Breusch-Godfrey autocorrelation test was utilized.

Table 4.5: Test of Autocorrelation

Wooldridge test for autocorrelation in panel data **H0: no first-order autocorrelation**
F(1, 429) = 0.324
Prob> F = 0.5719

According to Table 4.5, because the p-value of 0.5719 is greater than 0.05, the null hypothesis of no serial connection is not rejected.

Stationarity Test

The test results for the Levin-Lin Chu unit root are shown in Table 4.6. Panels with unit roots were discarded because the p-values for all variables were less than 0.05. With this, the panel data for all the variables became stationary.

Table 4.6: Levin-Lin Chu unit-root test

Levin-Lin Chu unit-root test

Variable	Hypothesis	p value	Verdict
Financial sustainability	Ho: Panels contain unit roots	0.0000	Reject Ho
Portfolio mix	Ho: Panels contain unit roots	0.0000	Reject Ho
Liquidity	Ho: Panels contain unit roots	0.0000	Reject Ho
Fund size	Ho: Panels contain unit roots	0.0000	Reject Ho
Operating costs	Ho: Panels contain unit roots	0.0000	Reject Ho

Correlation Results

Correlation analysis was carried out to establish the strength and direction of association between each predictor variable and the response variable. The results in Table 4.7 show the nature of relationships between the study variables in terms of magnitude and direction.

Table 4.7: Correlation Results

Correlations

		ROI	Portfolio mix	Fund size	Liquidity	OE
ROI	Pearson Correlation	1	.373**	.666**	.150	.749**
	Sig. (2-tailed)		.000	.000	.042	.000
Portfolio mix	Pearson Correlation	.373**	1	.367**	-.214*	.571**
	Sig. (2-tailed)	.000		.000	.039	.000
Fund size	Pearson Correlation	.666**	.367**	1	.070	.715**
	Sig. (2-tailed)	.000	.000		.503	.000
Liquidity	Pearson Correlation	.150	-.214*	.070	1	-.208*
	Sig. (2-tailed)	.042	.039	.503		.045
OE	Pearson Correlation	.749**	.571**	.715**	-.208*	1
	Sig. (2-tailed)	.000	.000	.000	.045	

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

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

The results in Table 4.7 reveal that portfolio mix and financial sustainability (ROI) are positively and significantly correlated (r=0.373, p= 0.000 < 0.05). In addition, the results show that liquidity and financial sustainability are positively and significantly correlated (r=0.150, p = 0.042 < 0.05). Further, results show that fund size and financial sustainability are positively and significantly correlated (r=0.666, p = 0.00 < 0.05). Finally, operating costs and financial sustainability exhibited a positive association and statistically significant relationship (r = 0.749, p = 0.000 < 0.05).

Regression Results

A linear regression analysis is done to explain further the relationship between independent variables (portfolio mix, liquidity, operating costs and fund size) and the dependent variable, financial sustainability. Table 4.8 below summarizes the model summary results.

Table 4.8: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.776[a]	.602	.584	.75337

a. Predictors: (Constant), Operating expense, Liquidity, Portfolio mix, Fund size.

Table 4.8 above summarizes the regression model illustrating the influence of firm specific factors on financial sustainability. The adjusted R squared value of 0.584 suggests that 58.4 % of variations in financial sustainability occur due to the firm specific factor variables, while other variables not included in the study justify for 41.6% of deviations in financial sustainability.

Table 4.9 Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	467.730	4	116.932	150.686	.000b
	Residual	357.203	460	.776		
	Total	824.933	464			

a. Dependent Variable: Return on Investment
b. Predictors: (Constant), Operating expense, Liquidity, Portfolio mix, Fund size
The fitness of the model is determined using the variance analysis and the results are shown in table 4.9 above. The F statistics of 150.686 is significant since the p value of 0.000 is less than p= 0.05. The model is therefore fit at a confidence level of 95 percent and there is at least one independent significant variable. Hence, for financial sustainability, independent variables are good joint predictors.

Table 4.10 Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.304	.461		5.406	.000
	Portfolio mix	.344	.189	.077	2.027	.043
	Liquidity	.021	.005	.073	2.164	.031
	Fund size	.336	.039	.274	5.809	.000
	Operating exp	.637	.061	.580	10.949	.000

a. Dependent Variable: Financial sustainability

Table 4.10 above illustrates the coefficients variables for the regression financial sustainability on firm specific factors. The results show a statistically significant positive relationship between portfolio mix (p=0.043) to financial sustainability with a regression coefficient of $\beta = 0.344$. Liquidity has a positive and significant relationship with financial sustainability (p=0.031) and a regression coefficient of $\beta = 0.021$, while fund size has a positive and significant relationship with financial sustainability (p=0.00) and a regression coefficient of $\beta = 0.336$. Operating costs has a positive and significant relationship with financial sustainability (p=0.000) and a regression coefficient of $\beta = 0.637$.

The linear equations for the four constructs can be expressed as:
Financial sustainability = $2.304 + 0.344X_1 + 0.637X_2 + 0.21X_3 + 0.336X_4$

Hypothesis Testing

The hypotheses were tested using multiple linear regressions. The purpose of hypothesis testing is to determine if the results are statistically significant. Table 4.10 shows multiple regression results. The acceptance/rejection criteria were that, if the p value is greater than 0.05, the Ho_1 is not rejected but if it's less than 0.05, the Ho_1 is rejected.

Portfolio Mix and Financial Sustainability

The first null hypothesis, H_{01}, stated that: portfolio mix has no significant effect on financial sustainability of pension schemes in Kenya. Results in Table 4.10 show that the p-value was 0.043<0.05. This indicates that the null hypothesis is rejected hence there is a significant effect of

portfolio mix on performance of pension schemes in Kenya. Portfolio mix was positively and significantly related with financial sustainability of pension schemes in Kenya (β=0.344, p=0.043). The study concludes that portfolio mix impacts on the returns registered by pension firm in kenya positively.

These results concur with Namusonge, Sakwa and Gathogo (2017) who found that the asset mix has an immensely positive influence on the financial sustainability of occupational pension schemes. The findings are also in line with Mutula (2018) who found that diversification decisions, management competency, investment methods, and regulatory compliance all have a positive as well as substantial relationship with pension fund investment sustainability. This study finding is also in agreement with Mercer (2018) who found out that investment strategy, members' contribution, and regulatory framework were key determinants of financial growth of occupational retirement schemes in Australia. portfolio mix enhances the cash flow of pension funds and hence, pension schemes can invest in ventures with positive returns. This implies that portfolio mix is very critical towards the financial sustainability of pension schemes, that is, good mix delivers better financial sustainability. However, Ondieki (2010) finds an insignificant association between the portfolio allocation of pensions firms and their financial sustainability. However, imposing restrictions on portfolio mix of pension schemes limits their operations and hence, financial sustainability.

If the pension funds invested in the domestic stock market heavily, then they will play a critical role which could translate into an insignificant impact on asset prices. Hence, the higher the portfolio mix, the better the returns. It is therefore imperative for pension schemes to carefully select their investments to reduce cases of non-performing investments. Reduced cases of non-performing investments to total investments is an indication of better performance of the scheme. The way in which pension funds allocate resources among investments explains most of the total performance of the schemes.

Operating Costs and Financial Sustainability

The second null hypothesis, H_{02}, stated that: operating costs has no significant effect on financial sustainability of pension schemes in Kenya. Results in Table 4.10 show that the p-value was 0.000 <0.05. This indicates that the null hypothesis is rejected hence there is a significant effect of operating costs on financial sustainability of pension schemes in Kenya. Operating costs was positively and significantly related with financial sustainability of pension schemes in Kenya (β=0.637, p=0.00). Thus, higher operating costs should translate into increased returns for pension firms in Kenya.

The study findings concur with Muriithi (2017) who found a strong relationship between financial performance and investment management cost as well as an administrative cost which lowered retirement income since the expenses is paid from the pension funds. Kigen (2016) noted that pension schemes also incur investment costs that could be significant in nature which could in the long run positively influence the sustainability of a pension scheme. Operating costs are crucial for any pension funds due to the demand to maximize returns on various organizational components

and the impact such a choice has on a pension's capacity to deal with its competitive and dynamic environment.

However, the findings contradict Mutuku (2014) who established that high costs of administration normally lead to low benefits upon retirement for those retiring and low annual rates of return to members. This is especially so with defined contribution schemes since their expenses were paid from the pension funds. The operating costs increase further as there were no standard rates recommended by the authorities to be applied by the service providers. Such operating costs and other expenses pose a risk to the pension payouts.

Also, Acikgoz, Uygurturk and Korkmaz (2015) findings indicated that there is an insignificant relationship between the funds operating expenses and financial sustainability of an organization. Their argument was based on the idea that it may not be realistic to speak of growth in a fund in real terms. It may be more realistic to look at growth in terms of changes in performance in the stock market or the size of the fund based on the changing number of participants and growth in their contribution. Further, Ngetich (2012) however noted that operational costs are one of the key factors affecting the growth of pension schemes in Kenya. It means that pension firms need to find a good balance between necessary expenditure that has the potential to generate positive results.

Liquidity and Financial Sustainability

The third null hypothesis, H_{03}, stated that: liquidity has no significant effect on financial sustainability of pension schemes in Kenya. Results in Table 4.10 show that the p-value was 0.031 <0.05. This indicates that the null hypothesis is rejected hence there is a significant effect of liquidity on financial sustainability of pension schemes in Kenya. Liquidity was positively but significantly related with financial sustainability of pension schemes in Kenya (β=0.021, p=0.031). The study results show that liquidity is a significant factor affecting financial sustainability. Pension firm's liquidity buffers are not predominantly made up of cash. Instead, they consist of high-quality assets and funding sources. All pension funds assume they can sell assets in their respective buffers, provide them as margin or use them as collateral to raise cash at a reasonable cost in a crisis. Additionally, some pension funds assume they can continue to draw on funding sources in the liquidity buffer during a crisis.

The results concur with Boon, Briere and Rigot (2017) study in the United States, Canada, and the Netherlands which established that pension scheme size and liquidity influenced risky asset investment significantly. Pension funds can calibrate liquidity buffers to allow for new and opportunistic investments if asset prices are expected to rise following a crisis. The ability to invest strategically in a crisis reflects structural differences between pension funds and other asset managers. Pension funds have a relatively long investment horizon, making them less sensitive to periods of high volatility. In addition, they receive steady contributions from members and are not subject to investor redemptions.

However, the results differ with the findings of Were, Iravo and Wanjala (2017) who established that liquidity had a positive but not statistically significant influence on financial sustainability.

Long periods of low interest rates have incentivised a reach for yield and leverage build-up across the spectrum, including more innovative forms of securitisation, such as those of private equity funds. With rapid increases in interest rates and receding liquidity in core markets, simultaneous deleveraging can generate liquidity demand pressure, which could lead to market dysfunction and financial instability. The issue of liquidity for pensions is very vital to the existence since illiquidity can lead to loss of businesses thereby reducing their potentials of earnings and profitability. This is the because high liquidity position of pensions helps them to meet up with obligations of which some lead to funding of investments that could aid the pension to earn investment income.

Fund Size and Financial Sustainability

The fourth null hypothesis, H_{04}, stated that: fund size has no significant effect on financial sustainability of pension schemes in Kenya. Results in Table 4.10 show that the p-value was 0.000 <0.05. This indicates that the null hypothesis is rejected hence there is a significant effect of fund size on financial sustainability of pension schemes in Kenya (β=0.336, p=0.000). The study results show that fund size is a significant factor affecting financial sustainability. Therefore, pension firms with large fund size will register increases in returns on investments.

Pensions which large fund value are able to spread fixed overhead expenses over a larger asset base. Further, managers of big funds can gain positions in beneficial investment opportunities not available to smaller market participants. Thus, large funds are able to accomplish trades at more favorable spreads, given their market positions and large trading volumes. This is in line with majority of previous studies done that might not account for country heterogeneity in industry size. Sabugo (2017) study which showed that growth of investment income in social security schemes is positively affected by member contributions, benefits payment and value of social security schemes. Similarly, Kigen (2016) which also found a very strong relationship between pension contribution and their financial returns. This means that larger funds achieve higher returns than small funds. This study contends that large fund value is important in maintaining higher returns in a pension scheme. It means that the pension scheme has the opportunity to invest in a wider pool, diversify risks and subsequently generate higher returns. Thus, pension firms should identify strategies that will ensure that contributions into their fund increase as it would allow the firm to accommodate their expenses, invest in profitable ventures and subsequently improve their financial sustainability. The study also reveals that returns improve with higher liquidity. Therefore, we can conclude that the larger the fund size, the higher the return.

The findings contradict Oluoch (2013) study that established a weak positive relationship between returns and fund value. The major concern of fund size or fund value is the variability of the value of fund assets, which have always been marked to market. With equities traditionally accounting for the largest share of the assets, and with the present value of the liabilities determined by administrative and actuarial decisions, this may cause a shift in the asset variability. Now that liabilities, too, may swing with the vagaries of the market, pension fund risk will shift from the variability of the assets alone to the variability of the surplus. The interplay between asset values and liability values can impact on the financial sustainability of the firm positiv

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

This chapter reviews the results from the previous chapter, it further derives conclusions as wells as the limitations encountered during the study. In addition, it provides recommendation for policy makers and gives suggestions on areas where further studies can be done.

Summary of Findings

The objective of this research was to assess how firm specific factors influences the level of financial sustainability of pension schemes in Kenya. The selected variables for investigation included portfolio mix, liquidity, fund size and operating costs. A descriptive research design was selected to complete the research. Secondary data was gathered from RBA reports and individual pension schemes annual reports and an analysis made using SPSS. Yearly data for 93 schemes for five years from 2016 to 2020 was obtained.

Portfolio Mix and Financial Sustainability

The first objective was to establish the effect of portfolio mix and financial sustainability among pension schemes in Kenya. The correlation results at 5 % significance level show that portfolio mix had a positive correlation with financial sustainability. The association was also statistically significant. Regression results (β=0.344, p=0.043) show that there was a positive and significant effect of portfolio mix on the financial sustainability among pension schemes in Kenya.

Operating Costs and Financial Sustainability

The second objective was to examine the effect of operating costs and financial sustainability among pension schemes in Kenya. The correlation results at 5 % significance level show that operating costs had a positive and significant association with financial sustainability. Regression results (β=0.637, p=0.000) show that there was a positive and significant effect of operating costs on financial sustainability among pension schemes in Kenya.

Liquidity and Financial Sustainability

The third objective was to assess the effect of liquidity and financial sustainability among pension schemes in Kenya. The correlation results at 5 % significance level show that liquidity had a positive and significant correlation with financial sustainability. Regression results (β=0.021, p=0.031) show that there was a positive and significant effect of liquidity on financial sustainability among pension schemes in Kenya.

Fund Size and Financial Sustainability

The third objective was to examine the effect of fund size and financial sustainability among pension schemes in Kenya. The correlation results at 5 % significance level show that fund size had a positive correlation with financial sustainability. Regression results (β=0.336, p=0.000) show that

there was a positive and significant effect of fund size on financial sustainability among pension schemes in Kenya.

Conclusions

This section presents the conclusions drawn from the research findings for each of the research objectives.

Portfolio Mix and Financial Sustainability

The purpose of the research was to find out the association between firm specific factors and financial sustainability of pension schemes in Kenya. The findings indicated that portfolio mix had a positive and significant effect on financial sustainability. This implies that pension schemes that have a high degree of diversification are likely to post better financial sustainability than pension schemes that has less degree of diversification.

Operating Costs and Financial Sustainability

The results revealed that operating costs has a positive and significant effect on financial sustainability. This implies that pension schemes with higher operating costs may report higher financial sustainability compared to pension schemes with low operating costs. This can be explained by the fact that operating costs can translate to increase efficiency in offering services and making investment decisions.

Liquidity and Financial Sustainability

The study results indicated that liquidity had a positive and significant relationship with financial sustainability, which might mean that pension schemes with higher liquidity play a greater role in relation to financial sustainability.

Fund Size and Financial Sustainability

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

Recommendations for Policy and Practice

The study finding reveals that portfolio mix contributes to an increase in financial sustainability. The study therefore recommends that policy makers among the pension schemes in Kenya should come up with policies that enhance diversification into the various asset classes available as this

will lead to an increase in financial sustainability of pension schemes. Pension schemes board members should also advocate for an increase in portfolio mix to enhance the return on investment. Further, liquidity was found to have a positive and significant relationship with financial sustainability. The study therefore recommends that pension schemes in Kenya should strive to maintain optimal liquidity to meet short term obligations.

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

The study findings indicated that operating costs influenced the financial sustainability of pension firm positively and significantly. Thus, pensions should adopt optimal cost structure which will enable them to conduct their operations efficiently to ensure better returns to their members.

Suggestions for Further Research

The study findings revealed an R square of 58.4%. This implies that there are other factors that affect financial sustainability among the pension schemes in Kenya that were not addressed by the research. Other researches ought thus to focus on other factors for example; management quality, corruption, contribution, inflation rate, political stability among other factors that affect financial sustainability among pension schemes.

The study was limited to pension schemes in Kenya. Additional research can be carried on a comparative study of pension schemes in Kenya with other countries. Future research should look into how firm specific factors affects other factors besides the financial sustainability, such as growth, efficiency, development, stability among others.

Because of the readily available data, the focus of this research was drawn to the last five years. Future studies may span a longer time period, such as ten or twenty years, and might have a significant impact on this study by either complementing or contradicting its conclusions. A longer study has the advantage of allowing the researcher to catch the effects of business cycles such as booms and recessions.

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