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THE IMPACT OF REAL ESTATE INVESTMENT ON THE PERFORMANCE OF PENSION FUNDS IN ZIMBABWE

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DEDICATION

I would like to dedicate this dissertation to the most humble and patient woman I have ever known, my mother, Chengeto Mashingaidze.

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ABSTRACT

The study examined the impact of investing pension fund assets in real estate on the overall performance of a pension fund. The study categorised pension fund assets allocation according to the IPEC categorisation which are Real estate, Government stock, Loans and Mortgages, Shares and Debentures, Other Investments and Other Assets. The study examined all pension funds in Zimbabwe using consolidated published quarterly reports from IPEC for all pension fund assets allocation from 2010-2017. Data were gathered through content analysis and the study was longitudinal. Data was analysed using descriptive statistics with STATA. Regression results showed that allocation of assets in Government stock was positive and significantly (t-value 2.53, p=0.017) influence ROA in pension fund performance. Again Loan and Mortgage was found to negatively and significantly (t-value-2.55, p=0.016) influence ROA in pension funds. There is a negative statistically insignificant relationship between asset allocation in the real estate class and performance of pension funds (t-value -0.14, p=0.890). Recommendations to the regulators is that there is need for enforcing strict measures on pension funds that violate specified asset allocations and management needs to note that asset allocation in pension funds should not be random but it is important to monitor the contribution of each asset class to performance.

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CHAPTER ONE
BACKGROUND AND INTRODUCTION

1.0 Introduction

Policy-makers have increased their attention on pension funds administrations from the time they receive contributions from employees, investment of the funds, until the time they benefit the contributors. Pension funds are the principal sources of retirement income for millions of people in the world (ZSE, 2008). The pension funds are a means of facilitating privately funded retirement income savings by an ageing workforce (World Bank, 1994) and pension funds are now among the most important institutional investments in the world capital markets (Odia and Okoye, 2012).

A pension fund is a collection of investment assets which comprises of financial assets (such as money-market securities, bonds, loans, equities and collective investment vehicles), real assets, derivatives and alternative investments (Blake, 2006). Pension funds can be forms of institutional investors, which collect pool and invest funds contributed by sponsors and beneficiaries to provide for the future pension entitlements of beneficiaries (Davis, 2000). Employers set up pension funds because they offer significant tax advantages, assist employees in saving for their retirement, aid employers hiring the type of employees they want and increase productivity.

Pension funds can be invested into real estate, infrastructure and other key aspects of the real economy (Anohu-Amazu, 2016). The diversity of investment in Zimbabwe has created the problem of investments to select by investors. The problem of investments to select is one of the fundamental problems of investment decision making (Olaleye, 2008). The peculiar advantages of real estate qualify it as an asset class to be combined with other assets to achieve optimum portfolio returns. The Pension and Provident Funds Act (Chapter 24:09), state that a registered fund shall always hold its assets in Zimbabwe in investments which are realisable in Zimbabwe. Section 18 of the Act allows 10% of the aggregate cost value of all the fund assets to be invested in prescribed assets.

Such assets are defined to be in the form of locally registered securities which are issued or guaranteed by the state or which are issued by a local authority or statutory body, they could

be also in the form of loans approved by the commissioner to a local authority or statutory body.

The Act therefore implies that a pension fund cannot invest in foreign markets and also it may have to disinvest in higher yield investments so as to meet the statutory requirements with regard to prescribed assets. Prescribed assets are difficult to access. The problem is amplified by a shallow financial market; the equities and the property market are the main markets for pension funds, accounting for 75% and more than 50% of total investments respectively (Chitambara, 2010). The bond market and treasury bills are virtually non-existent. The money market is characterised by liquidity challenges.

Real estate is a significant investment asset class, a major contributor to economic worth and forms a significant and growing part of cross border direct investment. Hence, it is in the interest of national governments, the valuation profession and the public that the pricing of real estate is carried out reliably, consistently and transparently. Lack of knowledge of value may represent a barrier to entering investment markets and ultimately the free flow of capital. Consequently, real estate value may be impaired rather than enhanced (Downie, 1995).

1.1 Background of the Study

The economy of Zimbabwe was plagued by immense hyperinflation, for instance in July 2008 the official annual inflation rate was 231 million percent (McGreal, 2008). This made the adoption of a foreign currency as the medium of exchange inevitable. It no longer made sense to trade and invest in the local currency as prices were escalating rapidly. The impact of hyperinflation was evidenced by the destruction of the formal economy which consequently led to severe poverty. Wages, salaries and pension payments were unable to meet basic living costs of the country's citizens. Savings including pension accumulated over an individual's entire career were reduced to zero (*Newsday*, 2010). By the end of 2008, Zimbabwe introduced a multi-currency system which enabled foreign currencies to be used as a medium of exchange.

The pension industry has not been insulated from the woes of currency collapse. The primary objective of any pension fund is to provide financial security to members and beneficiaries in the event of retirement. However, pension funds in Zimbabwe have been unable to meet the pensioner's reasonable expectations in recent years and have resulted in an outcry from

pensioners. In terms of Zimbabwean dollars, payments for retirement income and the total accumulated amount were so large running into quadrillions. After the currency conversion most value came to as low as nothing (Mphambela, 2012). Zimbabwe has undergone a series of economic changes characterised by low inflation and acute liquidity challenges amongst other things (Zimbabwe Monetary review, 2013). The Pension fund industry has not been spared and a number of pension funds were closed because of viability problems (Nyakazeya, 2014). Pension funds play a pivotal role in the economy as they mobilise resources and influence the activities of the Zimbabwe stock exchange. This study seeks to analyse the relationship between real estate investments and performances of pension fund portfolios in Zimbabwe.

In Zimbabwe, the statutes governing pension funds are the Pension and Provident Funds Act Chapter 24:09 of 1976, Insurance and Pensions Commission Act (Chapter 24:21 of 2000) and the NSSA Act (Chapter 17:04 of 1989) upon which NSSA is established. The statutes overlook the risk nature of the pension funds and hence this makes it difficult to achieve effective protection of members and beneficiaries. The regulatory aspects of the acts must target to achieve a sufficient and stable pension funding level to ensure that the members and beneficiaries' benefits are secure. Although the Pension and Provident Funds Act Section 19 looks on how to deal with unsound funds, it does not create conditions for encouraging ethical pension fund management.

Five risks were identified as affecting provision of retirement income form pension funds, namely, political risk, longevity risk, investment risk, inflation risk and low replacement ratio (Dodge, Laurin and Busby, 2010) Political risk refers to the risk that retirement income will be cut as a result of changes in the governing system before an individual reaches retirement age. Longevity risk is the possibility that the retiree will outlive the amount reserved for retirement income. Investment risk emanates from a mismatch between actual and expected investment returns, particularly when actual investment returns are lower than expected investment returns used in the provision or valuation, the retirement income will consequently be lower.

Inflation risk is defined as the erosion of the purchasing power of retirement income due to the continuous rise in the general price levels. A low replacement ratio is a result of income received after retirement being insufficient to secure the same standard of living enjoyed from the income in the pre-retirement period.

Pension funds contribute to the Gross Domestic Product (GDP) of countries and are capital sources in financial markets (Omondi, 2008). As at December 31, 2009, pension fund investments on the Zimbabwe Stock exchange totalled about US$2.6billion of the US$4.6 billion capitalisation (Mhaka *et al*. 2014), making them the single most dominant industry category on the local bourse. Real estate can be considered a safe way of investment comparing to others despite its lower return. It contributes to the general improvement of infrastructure which is an important economic development pillar.

However, real estate value is created, changed and destroyed by the interaction of four forces: physical, political, economic and social (Gaddy and Hart, 1993). Physical includes factors such as climate, topography, availability of water and water quality. The political externalities that affect property value include controls over money and credit, government insured or guaranteed loan schemes, health and safety codes, building regulations, rent controls and tax burdens. Economic factors include availability of employment, wage and salary levels, the economic base and diversification. Social externalities include demographics and life-style changes. In contrast, Fisher and Martin (1995) place emphasis on a narrower group of factors including physical real estate, property rights, bundle of rights and financial components as factors that provide value to real estate. In order to facilitate the analysis of value components, many definitions have been developed. However, the meaning and definition of value has long been a source of controversy reflecting the continually evolving nature of the valuation process (Appraisal Institute, 1996).

A lack of common agreement among values and investment analysts/practitioners exists as to the precise meaning of terms stemming from the abstract nature of concepts and definitions (Baum et al., 1997). An investment valuation is an attempt to determine the best price reasonably expected in the current market, whether or not this represents intrinsic worth, Crosby (1994). While the distinction between worth, price and value are not artificial (French and Byrne, 1996), debate in this area has deflected discussion away from the consideration of real estate value per se to one of comparison between the different concepts.

Real estate, being a discernible and distinguishable asset class, plays a role in the asset allocation of institutional portfolios (Lekander, 2015). One reason for viewing real estate as potentially fulfilling various roles depending on the overall portfolio's objective is the complexity and heterogeneity of assets. The characteristics of real estate in the context of its

real asset characteristics along with real estate's role in the asset allocation puzzle (Ang, 2012). It is against this background that the study seeks to find out the contribution of real estate performance to the portfolios of pension funds in Zimbabwe

1.2 Statement of the Problem

Data on the relationship between contribution of real estate in pension fund portfolios is back dated to late sixties (Craft, 2001). Real estate is one of the less risky type of investment which can be utilised in volatile economic and political environments. Pension funds play a pivotal role in the development of an economy. Zimbabwe has undergone a series of economic changes from the time of hyperinflation up to the post dollarization era. Little literature on the performance of pension funds has been written based on the Zimbabwean economic climate. Pension funds were greatly affected by the hyperinflation which left most of them collapsed. Zimbabwean pension funds are growing and some are shrinking and there is need to find out if real estate investment is the secret for those remaining viable in difficult economic environment like Zimbabwe. The empirical studies have left a research gap on the effect of real estate performance in a pension fund portfolio. This study attempts to determine the effect of the real estate's investment in the pension fund portfolio in the Zimbabwean setup. The pension manager can choose from five broad categories of asset returns: common stocks, long and intermediate-term government bonds, private real estate and public real estate (Craft 2001).

1.3 Aim of the study

This study is aimed at examining the impact of real estate to the performance of mixed-asset portfolio of the fund with a view to providing a guide for institutional investors and portfolio managers on investment decision making including regulatory bodies for policy review and implementation.

1.4 Research Objectives

To achieve this aim, the following objectives were set and will be pursued:
1) To establish the performance of real estate investment relative to other assets in the portfolio of the Zimbabwean Pension Fund.
2) To establish the degree of association between real estate and the other asset classes.

3) To compare the performance of the portfolio of the Zimbabwe Pension Fund with and without the real estate asset.

4) To establish the optimality level of the Zimbabwe Pension Fund portfolio with and without real estate.

5) To establish factors affecting choice of real estate as an investment option by pension funds in Zimbabwe from 2010 to 2018.

1.5 Research Questions

The primary research question seeks to examine the contribution of real estate in a mixed asset portfolio of pension funds' investments in Zimbabwe.

1) What is the performance of real estate investment relative to other assets in the portfolio of the Zimbabwean Pension Fund;

2) What is the degree of association between real estate and the other asset classes;

3) How is the performance of the portfolio of the Zimbabwe Pension Fund with and without the real estate asset;

4) What is the optimality level of the Zimbabwe Pension Fund portfolio with and without real estate?

5) Why do pension funds invest in real estate?

1.6 Statement of Hypothesis

1.6.1. Null Hypothesis

H1: There is a positive relationship between real estate and pension fund performance in Zimbabwe from 2010 to 2017.

The implications of the null hypothesis are that real estate performance has positive effect on the performance of a pension fund.

H2: There is a positive association between real estate and other assets classes' performance.

H3 There is a negative relationship between pension fund performance without real estate.

H4 There is no optimality level in pension fund performance without real estate investment.

H5 There are several factors which influence real estate performance investment in pension funds.

1.7 Assumptions of the Study

The main assumption of the study will be that interviewees will be cooperative in sharing information concerning how they have been investing contributions of their clients in organisation. Secondly, all players in the industry have equal access to resources and have similar clients with similar attributes. Thirdly, the pension funds' sector has been liberalised and there are no strict barriers to entry.

1.8 Delimitations of the Study

This research is being carried out within Zimbabwe, with respondents of this study being the staff and management in the pension funds in Zimbabwe. The Researcher scans through both primary and secondary data from years 2010-2017 to investigate the performance of real estate in pension fund portfolios. The study does not examine other institutional investors except pension funds as these are not part of the study. Results of this study are applicable in the pension fund portfolios only and cannot be generalized since only it examined pension funds.

1.9 Significance of the Study

This research contributed to the existing body of literature on real estate investment returns to pension funds particularly from a Zimbabwean perspective. In addition, this research will provide information and a guide for institutional investors and portfolio managers on investment decision making. The results of the study are expected to inform decision makers (management, policy-makers and academia) on the best way to invest pension funds. The Regulatory authorities will be given a measure to regulate on investment of pension funds basing on the results of the research. Significant factors may be omitted completely. It might also be difficult to get information from some pension funds owing to their secrecy requirements as well as other corporate mismanagement.

1.10 Definition of Key Terms
- **Performance**: This is an act of accomplishing a task and achieving expected outcomes.

- **Real estate investment**: Real estate refers to land and buildings and some natural resources on the land. This is a segment of investments in the financial market which is considered to be very illiquid because of the low number of transactions involved.

- **Portfolio** – This is a collection of investments belonging to a particular owner.

- **Pension Fund**- This is a pool of monetary contributions which are made by employers or employees or both. According to The Pension and Provident Fund (PPF) Act [Chapter 24:09] (1976 p. 3), a pension fund is described any scheme or arrangement whose principal object is to provide benefits for persons who are or have been members of the scheme when retirement comes, on account of ill health. There may be arrangements for dependents of deceased members.

- **Asset** – This is something of value which belongs to a person or company. Such an item may be expected to meet debts and liabilities.

- **Optimum level** – This is the most conducive level of obtaining the most out of a particular situation.

1.10 Dissertation Outline

1. Chapter 1- Background to the study, Problem Statement, Research Objectives, Research questions, Research hypothesis, Scope, Rationale for the study
2. Chapter 2- Literature Review
3. Chapter 3- Research Philosophy, Methodology, Sampling, Data collection Methods
4. Chapter 4- Data collection, Analysis and Presentation
5. Chapter 5- Conclusions and Recommendations

1.11 Chapter Summary

This chapter introduced real estate and pension fund portfolios, the statement of the problem, the research objectives, delimitations of the study, significance and assumptions of the study and finally the limitations of the study. The next chapter focuses on the literature review.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

Due to high competition in the financial markets there is need to assess the performances of pension fund and investment managers as they handle large amounts of funds. There have been various reports in the financial markets indicating increasingly volatility. Firstly, in 2008 there was a global financial crisis, in 2009 there were scandals in the banking sector and in 2010 there was the Eurozone crisis. Seemingly, economic turmoil that have affected financial markets are reported daily in news feeds and media houses. These events have created the need to improve the management of financial institutions more so pension funds putting into account the socio-economic values and impacts. There is need for high level techniques as pension schemes are very complex. Investors and pension fund managers are aware of the above problems thus concerned with the performance of pension fund schemes available in the financial markets. This chapter will discuss the literature review theoretically and empirically.

The discussion will also set out research gaps and conceptual framework of the study. Literature review is done to aid the prevention of working on what has already been done without any perceived particular added to the research (White, 2000). It also brings out clarity and focus to the research problems by giving a better understanding to the subject area thus helping with conceptualisation of research problem by being precise and clear (Kumar, 2011). This study aims at empirically investigating how real estate investment has impacted pension fund performance in Zimbabwe.

2.1 Pension Funds: An Overview

Governments in many countries recognise the provision of pension funds in taking care of its aging population, defendants of breadwinner, in the probability of death of the breadwinner, by invalidity through accidents at work among others. Pension funds in most countries are managed by government institutions or private firms. A pension fund can be defined as a pool of financial resources that employees contribute with a goal of having enough resources to cater for their needs when they retire (Olabode, 2012). Thus, pension funds need to be invested to meet to the contributors' goals (Olabode, 2012). Pension fund is defined as a fund that an

employer establishes to facilitate and organise its employee's investments on retirement funds that the employer and employee contribute (investopedia.com).

Pension funds are meant to bring about long-term stability to employees when they retire. The pension funds are run by financial intermediaries to the company and its employees. However, for large corporations they run their pension funds in-house as they have the proper management and resources. Pension funds handle large amounts of capital as they represent large institutions for the investors. Pension schemes operations work under the principles of ensuring continuous growth of pension assets as they provide adequate rate replacement after retirement without having to compromise with pension investments security (Barrow, 2008). Regardless on the type of pension schemes, investment decisions have to be taken into consideration, taking into account retirement benefits that are targeted and guaranteed. In the recent past, pension fund has gained popularity globally, thus leading to exponential growth and development in most countries (Kigen, 2016). Consequently, performance and fund management are on the spotlight.

Statistics have shown that developed and developing countries have a high growth rate on pension funds (Kigen, 2016). In short, this ensures that assets (contributions and investment returns) are adequate to pay liabilities on time. There are two main types of pension funds management that are widely used that is defined benefit plan and defined contribution plan.

2.2 Measuring Pension Funds' Performance

Financial performance, according to Cheong (2007), is subjected to measure the performance of a firm. For example, pension schemes can improve financial performance by using its assets to generate profit. Brady (2009) suggests that financial reports offer valuable information about pension scheme performance to interested parties such as employees and retirees of a firm. Financial performance is an essential aspect in determining net income and assessing a firm's financial risk. Moreover, a pension schemes financial status can affect the financial welfare of its members during their retirement years. Accounting for pension benefit plans, pension schemes need to make many estimates. These estimates according to Blome et al. (2010) include prediction of future salary increment for covered employees, the discount rate to be used to determine the value of pension payments and on assist returns accumulated in the pension fund. Ratios are used as a way of determining financial performance in pension

schemes. According to Gallagher and Martin (2009), ratios are defined as association between two financial balances or calculations. Examples of these include Liquidity, Leverage Asset Management, Profitability and Market Value ratios. This study focuses particularly on Profitability Ratios including assets returns, equity returns and profit margins.

These profitability ratios measure the earnings level of pension schemes in comparison to a base, such as capital, sales or assets. ROE (Return on Equity) refers to measuring how the management has utilised the capital invested by shareholders (Brunner et al. 2008). Brunner et al. (2008) also defines Return on Assets (ROA) as a measure net income returned on each shilling of assets and Profit Margin as percentage profit, generated for each shilling of sales. This study investigates investment performance particularly returns on investments. This choice is informed by the researcher's opinion that pension plans are faced by difficulties that partially attribute to stock markets performance. More importantly the poor benchmark choices used in risk and investment performance control.

2.3 Understanding the Real Estate Industry

Pension Funds prefer investing directly to Real Estate over REITs and due to high cost involved they prefer external over internal management. Property complexes and intangible assets such as ownership rights. Moreover, real estate industry includes the work of organisations which provide related services such as brokerage or specialized consulting. Real estate development engages multiple organisations with multiple professional specializations to construct new properties and renovate or lease existing buildings. The business activity of real estate impacts several related industries and has a significant impact on the economic, social and physical fabric of urban environments.

2.3.1 Understanding Real Estate Performance in Zimbabwe
Due to globalisation, business operations experience competition creating the need to re-evaluate their real estate strategies. There has been high demand for space utilisation and workplaces thus businesses are now adopting a wide range of strategies in order to manage their strategies. Corporate real estate management that emerged supports this drive and have a continuous strategy aimed at enhancing real estate assets and service related facilities to their business.

However, despite the many articles on real estate, its core and non-core business management is not well understood. The study of real estate lacks proper research thus rhetorical models that show the relationship between corporate strategies and real estate decision making are not well established. Real estate field lacks empirical testing using required models to justify its value addition to firms. Unification lacks in the corporate real estate model thus contributing to real estate firm that add value not being recognized. Real estate, corporations and management facilities have evolved over time from individual transactions-based decisions to physical space. For this reason, they prefer traditional approaches to minimize cost and focus on short term results rather than long-term strategies (Joroff et al., 1993). The perspective of managing existing buildings has made many real estate and facility units to be established. CREM makes decisions that are based on the primary function and requirements in relation to structures not businesses. No much attention has been accorded to the value CREM adds strategically. This study contributes to the field by empirically testing corporate real estate management, adds value to non - real estate core business (pension funds) firm through a broader strategic management framework.

This study's objective is to use strategic management theories alongside the research on business performance, corporate real estate management, workplace performances. Management facilities and survey results framework to illustrate how directly and indirectly corporate real estate adds value to the core business and the pension fund wealth. Corporate real estate strategies can be linked differently to business strategies and explain tactical decisions in real estate and related actions to these strategies. This work study is based on previous theoretical models, in-depth interviews on corporate real estate and to service providers and limited up to date empirical studies.

The result is a model that can be used in future research to empirically test real estate contribution to the primary long-term goal of maximising wealth in firms' shareholders.

2.3.2 Shareholder Value

Shareholder value can be defined as the value of the firm created for the benefit of the shareholders from their investment of shares made in the company. It encompasses all activities which bring benefit to the return expected by the shareholders by increasing what they will benefit from the firm.

Anna and Kari (2006) developed their model of measuring whether real estate adds value to non-real estate business. They borrowed concepts from Kaplan and Norton's model (2004). In numerous investigations, shareholder value was estimated by two techniques accounting and market values. Joh (2003) in his examination eluded a few purposes behind picking accounting technique to gauge performance. First, the market values just mirror the free market activity of stock. Viewing accessible data however, this esteem does not present the real conditions of the organisation when securities exchange is wasteful.

Second, accounting estimation is all the more straightforwardly worried about gainfulness and company's survival than advertise valuation (Vu and Nguyen, 2017). Third, utilising accounting in estimating execution is accessible to unlisted and listed companies (Joh, 2003). In this examination, ROA was utilised to evaluate firm performance measured by accounting. The dependent variable in this investigation is firm performance that is estimated by return on assets (ROA). Return on Assets (ROA) measures value that is generally utilised by governance literature for accounting-based measures (Finkelstein and D'Aveni 1994; Kiel and Nicholson 2003; Weir and Laing 2000).

ROA evaluates the productivity of benefits utilised (Bonn, Yoshikawa and Phan 2004) and demonstrates financial specialists the profit the firm has created from its interest in capital resources (Epps and Cereola 2008). Firms' assets are best utilised efficiently, reflecting its rate of profit for its benefits. ROA is a pointer of short term and now performance which is ascertained as net income divided by total assets (Finkelstein and D'Aveni 1994). Since directors are in charge of the task of the business and usage of the company's assets ROA enables clients to measure survey and how well an association's corporate administration framework is working in securing and inspiring effectiveness of the company's administration (Epps and Cereola 2008).

2.4 Theoretical Framework

The theoretical framework is the introduction and description of theory which explains why there is existence of the research problem being investigated (Labaree, 2009). It can be defined as a framework which provides structure within which the relationships between variables of a phenomenon are explained (Mofele 2014). The theoretical framework of this research is

enshrined in the following theories financial intermediation, modern portfolio theory, efficient market hypothesis, capital market theory and total market theory.

2.4.1 Financial Intermediation

Financially, the phrase financial intermediary refers to an individual, institution or a company firm that conducts intermediation between two entities or more including pension funds (Allen and Santomero, 1998). The theory regarding financial intermediation was developed starting within the 60s and can be traced to the work of Gurley and Shaw (1960). It is based on information asymmetry and the agency theory. In principle, the theory states that institutions exist for information reduction and transaction cost that come up due to information asymmetry between lenders and borrowers.

Pension Funds receives larger flows of savings in comparison to other institutional saving because many beneficiaries regard it highly. Fiscal provisions of such a nature tend to increase saving demand through the channel of pension funds. Furthermore, the pension funds growth usually depends on the liberality of corporate social security pensions especially for particular benefit funds.

There are additional aspects of the association between the fund and public sponsor that motivates firms to establish pension funds. In regard to corporate finance, liabilities of defined benefit pension fund perspective, are considered as corporate debt that members can claim from the firm like other creditors. Fund investments, according to this perception are corporate assets that make the pension obligation collateral (Scholtens, 2003). Basing on financial intermediation theory, it primarily focuses on banks activities such as deposit taking and loan issuance define financial intermediary role. Financial intermediary theory expands its pension funds activities. Davis (2000) considers pension funds as types of institutional investor, that pool, save and invest money contributed by beneficiaries and sponsors to cater for the beneficiary's pension entitlements in the future.

Accordingly, the financial intermediary role is met by pension funds through investment of accumulated money into various financial assets that include government bonds, deposits, corporate equities, foreign instruments, corporate debt and real estate. As financial investors, pension funds could offer several advantages including improved risk trade-off of, better

returns due to diversification and reduced costs of transaction following large trade volumes (economies of scale). Characteristics such as costs of transaction and asymmetric information in the real-world market enable pension funds to benefit from fixed costs of assets evaluation, technological advances and decreasing average trading costs (Robu and Sandu, 2011). Thus, financial intermediation theory will contribute to the study.

2.4.2 Modern Portfolio Theory

Modern portfolio management (also known as modern portfolio theory (MPT)), originates with Markowitz (1952, 1959). MPF foundation was hinged on the following concepts: risk return trade-off, correlations in returns of different assets, portfolio selection and investment optimization. MPT main aim is in providing the best combination that will provide the best combination of portfolio that maximises returns for a certain number of risks. Asset risk is measured as the variance of asset returned, where variance measures how returns can deviate from their expected value. The variance return portfolio is the sum over all assets of the square of the fraction held in a specific asset (weight) times the return assets variance. MPT has a number of critical assumptions that focus on behaviour of individuals, which are implied to the behaviour of institutions. First, that the investor is rational. MPT s second assumption is risk averseness among investors in making decisions? About their maximum expected utility that will give higher returns with low overall risk. Thirdly, preference for portfolio with high expected returns over portfolio with low expected return. A fourth assumption is investors are price takers that cannot affect a security price, which in most cases aligns to large institutional investors. A fifth assumption, investor is knowledgeable about expected return in his portfolio. Thus, taking this assumption MPT playing a critical role in determining performance of existing portfolios in pension funds, and is of importance in pension fund financial performances based on investment returns.

2.4.3 Efficient Market Hypothesis Theory

Efficient market hypothesis is widely used and accepted concept financial studies. It relays that at any point of time all available information is contained in the price of securities and thus need for any new information that is not available in the current price time wastage.

The theory also argues that active investment management is needless and thus an investor focus should be on utilising the market index to determine investment strategy that an investor

will pursue (Malkiel, 2003). Performance evaluation on pension funds has been associated with market efficiency as originally presented by Fama (1970).

Markets are information ally efficient basing on the theory and thus would not bring out excessive returns from historical data. This is for the reason that all securities prices reflect information publically (Cochrane, 1999). This is important so as to under pension funds' performance in the market since they are related to security markets performance. As such it is expected that any investment that pension funds makes is related to the available public information and this will not cause abnormal performance (Malkiel, 2005). Efficient market theory will thus be of help to understand pension fund financial performance given the public available information on the various pension fund sizes.

2.4.4 Capital Market Theory

Capital market theory states that upward sloping market line shows greater returns will be accompanied by high risks. Van Horne et al. (2010) indicated that when there are long periods with high economic uncertainty like recession, premium risks on bonds increase substantially because defaulting risk is high for low rated obligations. This theory also relates the risk-return behaviour on fixed income security to other financial assets. This is key to pension funds' investments as it determines class mix. Fixed-income securities are considered relatively conservative investments. We would expect them to be on the lower end in the line of capital market.

2.4.5 Total Portfolio Theory

The Total Portfolio Theory confirms that bonds performance has improved even more than indicated by returns alone because bonds give diversification benefits substantially. In a market that is efficient, neither stocks nor bonds are dominant in a portfolio, however, a combination of both should give a risk adjusted return that is superior compared to either (assuming low correlation on stocks and bonds). Reilly and Wright (2004) showed that, low correlation between equities and bonds (about 0.27), stocks and bonds combination improves the return per unit of risk. This would end up maximising the overall return to pension fund members. The bond portfolio balances both liquidity and returns in portfolio. The scheme buys bonds that are long-term that will yield high returns and purchase shorter bonds that will easily be

sold for profit purposes and thus provide required liquidity. IPS (2012), postulated that asset maturity is timed to match scheme liability maturity. Thus, there is need for liquid funds to be available always to pay out monthly payments to the pensioners from the long-term investments. Genesis (2012) noted that yields from bonds vary from day to day depending on market conditions.

2.4.6 Arbitrage Pricing Theory

The Arbitrage Pricing Theory (APT) was grown principally by Ross (1976a, 1976b). It is a one-period model in which each financial specialist trusts that the stochastic properties of profits of capital resources are reliable with a factor structure. Ross contends that if harmony costs offer no exchange openings over static arrangement of the benefits, at that point the normal profits for the advantages are identified with the factor loadings. (The factor loadings, or betas, are corresponding to the profits' covariances with the elements.) The APT is a substitute for the Capital Asset Pricing Model (CAPM) in that both declare a direct connection between resources' normal returns and their covariance with other irregular factors. (In the CAPM, the covariance is with the market portfolio's arrival.) The covariance is translated as a proportion of hazard that speculators can't maintain a strategic distance from by enhancement. The incline coefficient in the direct connection between the normal returns and the covariance is deciphered as a hazard premium. Such a connection is firmly fixing to mean-fluctuation effectiveness.

2.4.7 The Black Litterman Theory

Dark Litterman (1992) proposes portfolio models appropriate for portfolio development. Litterman (2003) recommendations that advantage allotment can be separated into two distinct sorts of choices: resource assignment between various resource classes, for example stocks and bonds and resource distribution inside one resource class, for example nations and divisions. The hypothesis looks to beat issues that institutional financial specialists have experienced in applying present day portfolio hypothesis. The model begins with the harmony suspicion that the advantage distribution of a delegate specialist ought to be relative to the market estimations of the accessible resources, and afterward alters that to consider the 'sees' (for example the particular conclusions about resource returns) of the financial specialist being referred to touch base at a bespoke resource assignment (Black and Litterman 1992).

2.4.8 Barbell Theory

This is an assignment hypothesis where resources are centred around the extraordinary end on the hazard range, much the same as with a hand weight, the weight in on two closures. This would be vastly different from a standard (MPT) which has turned into the standard technique for resource assignment in the previous 20 years. The developments of the securities incorporated into the portfolio are amassed at two outrageous developments. For instance, you may allot 80% of your cash to swelling ensured treasury securities and 20% of your cash to forceful little development organization stocks, Walnut Hill Advisors LLC.

2.5 Investment Assets

An investment asset is a property that can be tangible or intangible of a firm that can be used for generation of economic benefits to the investor. The tool chosen for being the medium to which the investor will get their return. The main asset classes used for investment by pension funds are equities, real estate, bonds, infrastructure and cash. Due to high risk involvement with equity investment, pension fund investors expect long-term high returns from these assets. Company shares are equities.

2.6. Money Market Securities

Money market securities are debt securities that give their owner the unconditional right to receive a stated, sum of money on a specified date (Firer et al. 2008). They are also referred to as money market instruments. The following securities will be used for this research bonds, loans and equities (Levisauskaite, 2010).

2.6.1 Bonds

This loan which has fixed income return over a period of stated time (Firer et al. 2008). It is an interest-only loan of which interest is paid through a coupon and the par value or nominal value is repaid at maturity (Firer et al. 2008). Bonds are securities issued by a corporation or governmental body for specified term. The following comprise the main characteristics of bonds (Levisauskaite, 2010). They have a fixed interest or variable income. Bonds become due for payment at maturity, when the par value/ face value of the bond are returned to the investors.

The person buying bond is called the creditor in the view of the one selling the issuer. The creditor has no rights to ownership rights unlike equity. The major advantages of bonds are that they are safe form of investment as the holders get their money in case a firm winds up operations without notice (Bauer et al., 2010).

The main disadvantage is that they have a limited source of profit (Bauer et al., 2010). They are also too many types one needs to evaluate so that they benefit well from the investment (Bauer et al. 2010). Bonds are classified or named as per issuer like government treasurer bills, municipal bond, corporate bond or junk bond. Types of bonds were grouped into more than eight namely type of issuer, coupon payment, collateral security, recall responsibilities, place of circulation, quality and form of payment (Levisauskaite, 2010). Pension funds may invest in government or municipal bonds even though they may be less rewarding because they offer minimum risk unlike junk bonds or corporate bonds.

Pension fund investment in South Africa is according to stated investment objectives in securities (treasury bonds, corporate stocks and bonds), real estate (Firer et al. 2008). According, Levisauskaite (2010) the evaluation of a suitable bond involves both qualitative and quantitative analysis. Thus, quantitative analysis of issuer looking at quantitative indicators for example the financial ratios which allow assessing the financial situation, debt capacity and a company's credibility issuing. Bonds are debt instruments and investors in bonds become creditors   during assessment in analysis of a firm's credibility (Levisauskite, 2010). Bond funds held 22 percent of US mutual fund and ETF assets (Bauer et al., 2010). This shows that bonds are a good investment. Unfortunately, in Zimbabwe the bonds market needs to be established and start functioning. This gives the Institutional investors (Pension funds) in Zimbabwe limited choice of that type of investment. They, however, utilise the government bonds and treasury bills which are issued from time to time.

2.6.2 Loans

A loan is a specific amount given by a creditor to which the borrower will pay interest and return the amount in full or in part as per agreement (Harrison, 2012). Loans that can be used as investment assets by pension funds are those sought by reputable companies for their utilisation have specified terms like debentures (Arslanagic, 2016). A debenture is a long-term loan made by a company (Harrison, 2012) and receives interest at a specific rate per annum for

its whole life and is repayable on maturity (Harrison, 2012). Some debentures can be converted into loan stock thus share specific class named convertible loan stock they will give better returns when converted but however they are more risky than ordinary debentures. Loans are less risky thus providing pension fund with interest which can cater for cash payments of monthly pensions. It is a way that can assist in cash flow management. Funds outgoing, the benefits covered by the funds' assets (Arslanagic, 2016). Thus, in the funded system these discounted payouts are to be covered by the funds' assets (Arslanagic 2016). Debentures can be sold to second parties and the term and conditions will remain unchanged. If interest is not remitted annually the investor will quickly see the firm has problems thus change their investment. In Zimbabwe the debentures are available but a bit risky as companies are prone to fail due to harsh economic environment and on liquidation, they are high possibility of lack of funds available to pay obligations.

It makes loans a limited choice of investment for investors' institution (pension funds) who are mandated to pay their members monthly payouts from the investments. These forms of securities are used in the short or long run to raise a steady flow of finance. They have less risk in the short term and higher risk in long-term to the investor. The borrowers are usually at the mercy of issuers as collateral is usually required. Bank loans are privately negotiated, be they residential or commercial. When property act as a collateral they are termed mortgages. The mortgage terms vary depending on whether the borrower or the lender carries interest rate risk and in which manner the interest and amortisation is paid. Commercial mortgages generally have seniority over any other claims on a company's cash flows (Arslanagic, 2016).

Senior debt holders are paid before junior debt holders and in case of bankruptcy they get compensated first. Since property investments are typically large, thus uncommon for banks to cooperate and lend as a syndicate to avoid excessive unique risk. Senior debt holders may have negotiated terms that give them a say on whether corporation borrowing can acquire subsequent debt. Senior secured debt generally does not warrant a big spread over market lending rate benchmarks, such as Libor, Euribor or Stibor, since the seniority and security in the underlying property reduce the lenders risk as they will not be compensated in case they default. The lenders required spread increases with risk, making subordinated debt more expensive than senior secured debt.

2.6.3 Equities/Stocks

Indeed, investing in equities could provide additional money to the trust funds (Munnell, 1998). For equity premium they will come with higher risk, creating greater volatility around the mean, but proponents maintain that the social security program is as well-equipped as any other investor to absorb the higher risk. Earning an equity premium of 4.7 percent on a portion of asset trust fund would alleviate a significant increase in taxes or reduction in benefits. This approach would allow closing the financing gap while maintaining support in social security current structure. OECD (2015) survey shows a clear increase in alternatives asset investment amongst global pension funds that more mixed results in equities.

While allocations to alternatives have increased, global pension funds haven't turned to the equity markets to increase returns, on average OECD, 2015). With now several years of buoyant equity markets, forward-looking return expectations in equities have been lowered while volatility expectations remain elevated, prompting pension funds to lower equity allocations in favour of alternatives. A huge decrease in equity investment from (32.4% - 29.8%) in 2010-2014 was witnessed (OECD, 2015 p 14). Shifting market values factor into changing asset allocation; however, given that equity markets have advanced through most of this time period, it appears that on average, funds have been reducing equity exposure in favour of larger alternative investment allocations. Fixed income allocations increased slightly during this time.

Contrastingly, Japans Government Pension Investment Fund which is considered the world largest fund shifted its assets allocation from fixed income assets to equities with a 50/50 to bonds and stocks (OECD, 2015). Asset classes for example infrastructure and real estate provide alternative sources of income were also in high demand over the past.
Private market investment assets are valued less frequently thus have a lower ex-post standard return deviation, this have been a way of maintaining high return target funds, while focusing on the volatility of the portfolio. But this reduction in measured standard deviation can be illusory and may not properly capture the potential price volatility of private market assets due to appraisal in frequency.

Equity instruments have the effect of making illiquid assets more attractive than public equities which are subject to market vicissitudes and mark-to-market rules. Pension fund managers who

happened to be institutional investors on stock markets are deprived the opportunity to take ownership of the companies despite possessing high percentage shares. This poses a great risk to the operation of pension fund managers because they cannot be involved in the decision-making body as they have high stakes. Hutton (1995) states that pension funds have become absentee to landlords, as they exert power without responsibility thus making demands to companies without recognizing their reciprocal obligations as owners. Short and Keasy (1997) suggest once pension funds are locked in, it becomes expensive to monitor and they are not in a position to exist in case of trade on insider information. Murphy and Van NUys (1994) stated that pension funds are ran by individuals who sat have proper incentives in maximising the value of funds.

Going by this trend, it clearly shows pension funds are exposed to hidden risks, because they cannot access to the relevant information about their substantial investment and cannot offer any valuable suggestions as per the management affairs concerned. This leads to unwarranted loss, which subsequently may affect workers' pension plan.

2.6.4 Real Estate

Pension contributions have traditionally been heavily invested in liquid fixed-income securities, primarily government and corporate bonds (Oslen, 2015). However, these traditionally "safe" fixed-income investments tend to have low yields and therefore expose either plan sponsors (in case defined benefit plans) or plan beneficiaries (in case of defined contribution plans) to the risk that plan assets will be insufficient to support necessary retirement benefits (Oslen, 2015). This concern has also prompted fund managers to branch out into alternative higher yielding investment vehicles, including equity real estate. The European markets made the first largest real estate investments (Mannel, 1998). Different countries have gradually increased investments in real estate thus becoming globally concentrated (Mannel, 1998). The unlisted real estate portfolio is represented by 46 percent investment in US and 54 percent in Europe (Fisch and Gaines, 2016). Properties used in offices contribute to 60 percent of the funds not listed in real estate investments, the other two main sectors are logistics and retail sector that is 27 and 14 percent respectively (Fisch and Gaines, 2016).

Investing in unlisted and listed real estate creates a broader accessibility to investment opportunities. The listed and unlisted vary over time depending on local market conditions that stood at 77/23 quarterly the year 2015 (Vaan Loon and Aalbers, 2017). The cost of managing a real estate portfolio that is not listed is higher than that of managing listed equities and bonds (Vaan Loon and Aalbers, 2017). Properties are not bought and sold in regulated marketplace but through individual contracts.

The day-to-day management portfolio also requires more practical follow-ups. Most pension funds have attached considerable importance to establishing cost-effective structures. This also applies to tax, that it is a significant cost item in some cases. Moreover, real estate investment help in improving trade - off between risks and returns in the GPFG and the organisational and operational basis for a further increase in investments of real estate (Oslen, 2015). Questions on how much funds are supposed to be invested in real estate cannot be precisely answered. Therefore, it is important to first look at the share of total global wealth invested in real estate that can be estimated 10 and 15 percent (Oslen, 2015). Another way is to estimate an optimal allocation based on expected returns, risks and correlation between different types of investment (Oslen, 2015). Estimates of this allocation in academic studies vary but are normally range 10 and 20 percent.

2.6.4.1 Real Estate Pricing

Extant literature that has investigated real estate yields has adopted one of three main approaches (Crosby et al. 2016). Origins of real estate pricing can be traced back to the work of Froland (1987), Evans (1990) and Chandrasekaran and Young (2000). The first approach estimate adopted cap rates as a function of capital markets and macro-economic variables. (Crosby et al. 2016). The second approach was applied by US Band of Investment Framework which borrowed more concepts from MM Hypothesis of 1958 and WACC. A third model was that of Jun and Winkler as reported in Crosby et al. (2016) which also borrowed from CAPM and WACC. This study will adopt the Fisher's model (1930) and Gordon (1959) which proved to be a well-established model (Crosby et al. 2016).

$$K = RFR + RP - g$$

where   - **K**= Capitalisation rate

        - **RFR**= Nominal Risk free Rate

        - **RP**=Risk premium

g- Growth

2.6.4.2 Key Performance Indicators in Real Estates

Studies carried out in real estate performance indicated that key performance measures are both financial and operational (MSC Global, 2018). This study seeks to measure performance of real estate using both measures and mainly concentrating on yield, occupancy and collection rates.

Yield

Yield is a measure that compares the annual rental income (less bills if you run an apartment) against the purchase price. For example, when a property fetches $500 net rent per month, there will be an annual income of $6,000. If the property cost is $100,000 then there is a rent yield of 6%. The yield is the fee of return that accurately compensates the investor for the risks taken (Ataguba, 2017). As uncertainty rises, the required compensation for the level of risk must additionally rise, mirrored in a rise in yield. The yield (required rate of return) may be derived by using reference to the return on an alternative structure of perceived low-risk or safe asset (frequently the body of reference is the gross redemption yield on authorities' gilts or cash), plus gorgeous additions for risk (Ataguba, 2017). The preferred rate of return (also referred to as the yield or goal yield) is conventionally developed from a reliable price and market hazard top class for actual estate. Investors may also additionally pick to add unique threat premiums (Crosby, 2018). While this may also seem to be a quite simple process, actual figuring out the danger top class is extra complex. There are a number of those yields which include among others Net Reversionary Yield, Net Operating Income Yield, Gross rental passing yield and Gross Rent Receivable yield. Equivalent yield is popularly used in U.K according to MSC Global, (2018). This study adopted the Equivalent yield method which seeks to establish the IRR of an investment.

Occupancy

Occupancy rates are important to real estate investors because these numbers provide an indication of anticipated cash flows (Wilson et al., 2003). A commercial real estate investor looking for a shopping centre to buy is likely not interested in one that only has a 25% occupancy rate, meaning that tenants were leasing just 25% of the available storefronts and

restaurant space in the mall. An investor who buys a property with a relatively low occupancy rate has to spend time and money to find additional tenants and he or she risks not filling the spaces, while still facing maintenance costs and property taxes on them (Nourse, 1994).

Because of this, apartment complexes, malls and other facilities with low occupancy rates often sell for less than similar properties with high occupancy rates. In some cases, a low occupancy rate indicates that something is wrong with the shopping centre, such as its location or available amenities (Bdeir, 2003). Low occupancy rates may mean the facility is poorly managed by its existing owners or it is in an undesirable location. It is measured as a percentage of number of tenants to total occupation of the building or rental space in this study.

2.7 Empirical Literature Review

Brinson, Hood and Beebower (1986) and Brinson et al. (1991) in their study of US corporate pension plans concluded that the investment policy explained 93.6% of the total variation of the actual returns of the funds. In their study, 91 retirement benefit funds were studied over a 10-year period. The funds must have had a discretionary mandate with the investment manager. The asset classes considered were the equities and bond portfolios and cash equivalent portfolios. The fund returns were decomposed to the selection and timing reasons. Regression of the policy returns against the actual returns was done and the level of correlation determined.

Brinson, Singer and Beebower (1991) showed that 91.5% of the portfolio returns were attributable exclusively to strategic asset allocation. Elkin (1999) also stated that asset allocation, rather than stock picking or market timing, is by far the most important factor that determines the returns that a portfolio would generate over time. Ibbotson and Kaplan (2000) in their study of US retirement benefit funds concluded that the main determinant of investment performance of a retirement benefits fund is the asset allocation, rather than the stock selection.

Blake, Lehmann and Timmermann (1999) examined the asset allocation decisions of 364 individual, UK company pension schemes using data that spanned the period from 1986 to 1994. The criterion they used in identifying the sample was that each fund should have been managed by the same manager over this period, and that this manager should also have been responsible for the asset allocation of the fund over this uninterrupted period, in other words these were balanced mandates. Using this sample Blake et al (2006) found little variation in

the performance of these schemes, or in the strategic asset allocation decisions that they made over time. In addition, they found that the vast majority of time variation in returns was due to the strategic asset allocation decisions, very little of the variation was due to stock selection. They concluded that the empirical regularities that they observed were most likely due to the legal and economic environments under which these managers operated.

Using the quarterly returns on a much larger sample (2,175) of segregated UK pension schemes spanning the period from 1983 to 1997 Thomas and Tonks (2001) investigate the performance of UK equity portfolios managed by investment managers, in contrast to the performance of the balanced portfolios investigated by Blake et al. Thomas and Tonks' conclusions were consistent with those of Blake et al. The variety of techniques used to assess the quality of fund performance all suggested a very narrow cross-sectional dispersion in returns, which suggested that the managers were all "closet trackers". They also conclude that on the whole there were negative returns to both selectivity and to market timing.

Omonyo (2003) observed that risk and return are the key considerations in investment practices of Pension Fund Managers in Kenya. Current income is not their fund objective; however, the most predominant objective will be capital preservation. Pension schemes also differ from collective investment schemes as they have a minimum funding requirement and they are established to invest funds to meet pension liabilities, that is, they are invested with the expectation that they will be sufficient to pay pension entitlements when these are due. Mugo (1999) has observed that factors identified in finance literature are considered in investment decision by institutional investors at the NSE. However, the relevance of the factors is different as insurance companies and fund management companies consider company factors more important while Retirement Benefits Schemes consider industry factors more relevant. However institutional investors should not be looked at as homogeneous and therefore these findings cannot be generalized for Collective Investment Schemes. Nguthu (2009) in his research to establish how much asset allocation policy contributed to the returns level retirement benefit fund in Kenya found that the variation in returns over time for pension schemes is explained up to 62.4% by investment policy adopted by the trustees of the scheme. Other factors such as securities selection, timing of investments and managers' selection explained the remainder. The study was done on 40 segregated occupational schemes in Kenya and returns analysed using regression analysis and descriptive statistics.

In a study carried out on "The relationship between asset allocation and financial performance of pension funds" (Omondi, 2013), the researcher made the following conclusions: Asset allocation explains 28% of the variability of fund returns. The study also established that of all the asset classes permitted by the Retirement Benefits Authority (RBA), investments in equities was relatively more important than investments in fixed deposits in determining the overall performance of the pension funds.

2.5 Summary of Literature Review

Most studies tend to conclude that on average asset allocation strategies explain to a significant extent the performance of funds. Local study by Nguthu (2009) explained that asset allocation explained around 62% of the returns of pension funds in Kenya. Another study by Omondi (2013) explains the relationship between asset allocation and financial performance of pension funds. However, the scope of the study did not include the extent to which asset allocation limits contributed to the overall performance of the fund. This is important as regulator/policy makers and trustees in Kenya will be guided which on how ceiling placed on investment of certain asset classes has an impact on the fund performance so as perform their duties of maximisation of members wealth in a more informed manner. There has therefore not been any study carried out on pension funds in Kenya to determine the extent to which the impact of asset allocation limits has on the financial performance of pension funds in Kenya. This therefore justifies the need for the current study.

2.8 Conceptual Framework

Figure 2.1 conceptualises the relationship which exists between real estate investment and pension fund performance. To empirically examine the association between real estate and pension fund performance, the conceptual framework shows, loans, bonds and equities and real estate relationship with pension fund performance indicators. The researcher will use the Ordinary Least Squares regression model shown in Figure 2.1.

Independent Variables   **Dependent Variable**

Loans

Bonds

Equities

ROA

Real Estate

Control Variables
-Other assets
-Other Investments
- Cash
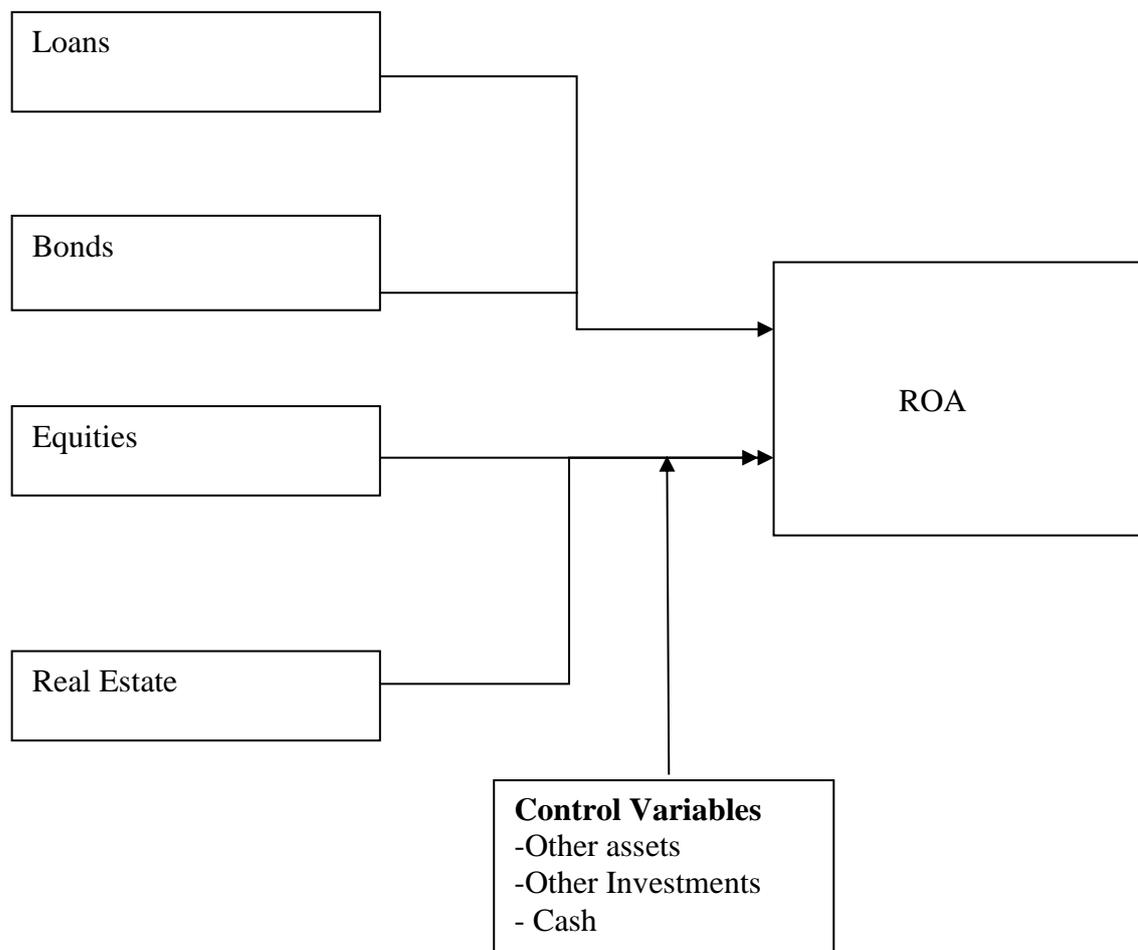
Figure 2.1: Conceptual Framework

Independent Variables, Dependent Variables and Control Variables

2.9 Literature Gap

Literature review uncovered that a lot of studies have been done both in developed and developing nations to test the relationship between pension fund assets allocation and fund performance. In Zimbabwe no similar studies have been done to test all allocation of fund assets in real estate and fund performance. Therefore, literature is weak, since it did not provide insights from developing nations particularly Zimbabwe and different results for some variables in explaining the performance of pension fund are still mixed and vague. This research was carried out as to fill in the currently existing gap in the already existing literature.

Zimbabwean pension funds the majority of them have been closed during and after financial crisis (Mazviona, 2009) due to investing in poorly performing assets during financial crisis. A

number of individuals have been affected through loss of employment, losing their life time savings and investment due to lack of proper fund asset allocation. With this background, the study will seek to unearth real estate investment contribution on fund performance from a Zimbabwean perspective.

2.10 Chapter Summary

The chapter discussed the literature on pension asset allocation and fund performance theoretically and empirically, it introduces the variables for the study as well proposing the conceptual framework which creates a link between independent and dependent variable. The next section will discuss in detail the methodology the researcher will use for data collection analysis.

CHAPTER THREE
RESEARCH METHODOLOGY

3.0 Introduction

The previous chapter reviewed the relevant literature on which this study was based. The reason for reviewing literature was to investigate how prior researchers have studied the impact real estate investment on firm performance of pension funds. This chapter consists of three main parts that discuss research design, data collection and data analysis methods. The first part covers the rationale of adopting a single case design and also justifies the employment of the case study approach using the pragmatism philosophy. The second part reviews on sample selection and carries an explanation on primary data collection activities, mainly from personal interviews with senior staff of pension funds and observation of processes, and secondary data collection from archival documents. The last section of the chapter discusses the within-case data analysis methods used for this study.

3.1 Research Philosophy

The philosophy taken for this research is a pragmatist research philosophy. This Pragmatism is concerned with action and change and the interplay between knowledge and action (Cole et al. 2009). This makes it appropriate as a basis for research approaches intervening into the world and not merely observing the world (Goldkuhl, 2011). This would be the case if the intervention is organisational change (as in action research) or building of artefacts (as in design research). The pragmatist research philosophy could yield better research results (Saunders et al. 2003) with the opportunity to use a mix of different methods in the research. Both quantitative and qualitative methods of research have their own shortcomings. The major criticism being thrown to quantitative research techniques is that the method cannot capture the perception of management. Duraya (2011) argued that some business events are sensitive as they involve management's judgement. Therefore, such issues cannot be fully explained without capturing management's perceptions in to account since the responsibility of both systems and their operations is within their discretion. Qualitative research has also been criticised (Paul, 2012) for involving too much of personal interpretations. Quantitative data was collected from annual reports and these were confirmed through the interpretations from management.

3.2 Research Approach

A deductive approach was used in gathering quantitative data to prove or disprove the hypotheses on the existence of relationship between real estate and pension fund portfolio performance. The rational to adopt deductive approach was that the research sought to test existing theories which have adopted in explaining investment in real estate and performance of pension funds. This approach requires collection of data, measurement and analysis before accepting or rejecting the existing theories and frameworks (Smith et al. 2008).

On the other hand, the inductive approach is another form of research approach that can be undertaken for a study. With an inductive approach, new theories and academic models are designed and tested in the study. There is no use of other academic models and theories. With the inductive approach, it is more like breaking new ground and with the deductive approach, it is more of being innovative using existing theories and models but applying them in new and different scenarios from past literature. According to Saunders et al. (2012), research approach is very crucial in any scientific study regardless of the focus area of that study.

Based on the research objectives of this study laid out in Chapter 1, this study employs a deductive approach as it tests the relationship between real estate and pension fund performance and uses existing real estate and investment theories as the basis of the study.

3.3 Limitations of the Study

International investments were not examined given the real estate focus of this study and the inherent problems with estimating international returns and volatility. The time for completion of the work and the ability of the researcher to include a larger size of sample for the primary research. For the time of completion, the researcher was limited to the timing guidelines for the completion of the dissertation with all parts of the study to be completed and included within the defined period for dissertation work. For the ability of the researcher to include a larger size of sample for the primary research, the limited time for completion meant that researcher had to allot enough time for each part of the study to be worked on effectively. The resulting time for the primary research limited the responses achieved by the researcher for the questionnaire. The researcher was likewise impacted by the identification of the questionnaire respondents and the convenience sampling approach provided mitigation to this issue. Another

limitation is the extent of data available on company's websites. While there was sufficient data and information available publicly from the annual reports, the company website and other voluntary related reports from the firm, there were other data and information that the researcher was not able to access as these were not publicly available. The researcher did not have access.

This research was conducted over a period of about six months and due to time and other resource constraints it focused on pension funds in Zimbabwe. The study concentrated on a sample of pension funds in Harare. There was no room for probing to get in depth data on issues as the research is going to make use of survey questionnaires in gathering data. The research may thus fail to capture all the relevant factors as it will only concentrate on pension fund representatives in Harare, some of the challenges to be identified might relate specifically to the environment in Harare whilst on the other hand some possible.

3.4 Ethical Considerations

When conducting any form of business or academic research, ethics come into play and have to be total observed throughout the whole process of carrying out the research. By definition, ethics in academic or business research are an expected societal norm of behaviour or code of conduct during the process of conducting the research. In the business senses, ethical conduct applies to the researcher conducting the research, the organization and members of the organization sponsoring the research and last but not least, the respondents themselves who partake in the research. In the academic sense, there are clearly outlined ethical guidelines stipulated by the University or Institution of learning that have to be adhered to when conducting research (Crowther & Lancaster, 2014). This study followed all the ethical standards of the University of Zimbabwe.

Ethics in business research refers to a code of conduct or expected societal norm of behaviour while conducting research. Ethical conduct applies to the organisation and the members that sponsor the research, the researchers who undertake the research and the respondents who provide them with the necessary data. This study took ethical considerations when gathering In conducting this research, the researcher ensured that respondents participated voluntarily in the study.

Care was taken to ensure that survey questionnaires did not to contain unacceptable language, which could either be offensive or discriminatory. The researcher maintained a high degree of privacy and anonymity of sample group members. Throughout the research, full acknowledgement of other authors' work was observed through Harvard referencing system. The author also endeavoured to uphold a high degree of impartiality in discussions and analyses conducted throughout the research.

3.5 Research Strategy

The study used a survey on pension fund portfolios picking on real estate's major projects to find out what size was financed by pension funds. The population of real estate projects as well as pension funds is very large such that it requires a large sample so that all characteristics are fully represented. The research strategy adopted was a survey. This was because the research was more tilted towards quantitative. A survey according to Saunders *et al.* (2009) has the same information about all the cases (individual people) in a sample that is the questions are standardised with the objective is to get consistent answers to consistent questions.

According to Mitchell and Jolley (2007) a survey is a relatively inexpensive way of gathering data and a lot of data can be collected from a large sample within a short time period.

3.6 Population and sampling techniques

3.6.1 Population

Population is the complete set of cases or group members (Saunders et al. 2009) which is under investigation. Adam and Kamuzora (2008) have defined population as the universal set and a sample as a subset. In this study, the population encompasses all (92) pension funds in Zimbabwe. In studying a population, focus is on sample or properties of the units in the population (McClave et al. 2008). For the purposes of interviews, the study selected individuals who had knowledge concerning the area of study. Therefore, the target population is made up of managers of pension funds, project managers in real estate. It would therefore be prohibitively costly and time consuming to try to study all of them.

3.6.2 Sampling

The researcher used purposive sampling to choose respondents of the survey. Senior managers, pension fund managers, real estate managers and other individuals who have more information

about the study were interviewed. In choosing the pension funds to be used in data collection, the researcher used census comprising of the 92 pension funds in Zimbabwe.

3.6.3 Sample sizes

Total sample of pension funds in Zimbabwe registered with the Zimbabwe association of pension funds is currently ninety-two and all were used in the study. The researcher's sample size was four hundred respondents.

3.7 Research Instruments

3.7.1 Interviews

With regard to the collection of primary data the researcher carried out in-depth interviews with different stakeholders in the industry including trustees, investment managers and project managers. The interviews carried out were personal, whereby the interviewer would visit the respondent at his work place and completion of self-administered questionnaire. An interview schedule was prepared to facilitate the interviews. An interview schedule was prepared to facilitate the interviews in this study a questionnaire was also be used to gather data on the portfolios of pension funds including factors affecting choice of real estate investment with other investments available.

3.7.2 Questionnaire Development

The questionnaire made use of closed questions with responses being given on a Likert scale with five possible responses; strongly Disagree, Disagree, Neutral, Agree and Strongly Agree. The questionnaire also includes a section for demographics which will cover issues such as respondent's age, gender, designation for tax purposes and educational qualifications. The questionnaire also collected statistical information on size of pension fund and various questions of how the fund invests its money.

3.7.3 Statistics from regulator/government

The other statistics on how the pension are invested was also collected from a secondary source, thus annual reports from the regulator or government authorities and any other statutory reports. These were tabulated and used in data analysis. This is consistent with the study done by Andov (2016) where they used secondary data from the regulator.

3.8 Empirical Regression Models

The main dependent variable of this study is performance, measured by ROA. As far as real estate is concerned, the key measurement items are Yield and Occupancy. Both these items were regressed using the same independent variables of the study which comprise elements of the Pension Fund Portfolio. These independent variables are Loans, Bonds, Equities and Real Estate. ROE is also a measure of performance.

The two dependant variables to measure impact of pension funds on real estate were regressed with the independent variables separately. Thus, the relationship between Loans, bonds, equities and real estate with yield and occupancy. The regression models used will be,

Yield (IRR) $= B_0 + B_1$ loans $+ B_2$ bonds $+ B_3$ Equities $+ B_4$ Real Estate$+$ e (Model 1)

Occupancy $= B_0 + B_1$ loans $+ B_2$ bonds $+ B_3$ Equities $+ B_4$ Real Estate$+$ e (Model 2)

ROA $= B_0 + B_1$ loans $+ B_2$ bonds $+ B_3$ Equities $+ B_4$ Real Estate$+$ e (Model 3)

ROE$= B_0 + B_1$ loans $+ B_2$ bonds $+ B_3$ Equities $+ B_4$ Real Estate$+$ e (Model 4)

Where
 B is the regression co-efficient
 e is the error term

3.9 Data Analysis Techniques

The data collected was processed using STATA and analysed using descriptive statistics and factor analysis. Descriptive statistics, to establish and confirm trends, was conducted on the data, correlation of variables under study has been done, to test for multicollinearity. Regression analysis was conducted to confirm or dispel the hypothesis, hence giving credence to or discrediting the theoretical postulates forming the basis of the hypothesis. The study employed both univariate and multivariate statistical analyses. ANOVA and Logistic Regression Analysis were employed to test the relationship between variables (Richarme, 2002). Univariate assisted in analysing the correlation which exists between each variable and

the extent at which each independent variable influence dependent variable. Multivariate analyses the extent at which organisational renewal using all explanatory variables to see the contribution of each to the overall firm performance.

3.10 Chapter Summary

This chapter focused on the methodology adopted in the study which involved the use of a questionnaire, interview guide, and data from the regulating authority of Pension Funds. Data analysis methods used were also discussed. The following chapter focuses on the results of data analysis.

CHAPTER 4
RESULTS AND DISCUSSION

4.0 Introduction

The previous chapters presented the research background, literature review and research methodology. The main thrust was on the research methodology that was used to carry out this study. This chapter, chapter four presents the results of the empirical tests. It is presented in eight sections. The researcher used descriptive statistics, inferential statistics and regression analysis to test the data. STATA software was used for data analysis. The chapter further provides the basis upon which conclusions and recommendations of the study were based. This chapter aims to investigate the influence of pension fund assets allocation on the pension fund's performance. The researcher used descriptive statistics, inferential statistics and regression analysis to test the data.

4.1 Descriptive Analysis

This section essentially present descriptive statistics of dependent and independent variables included in this study. The dependent variable of this study is performance (measured by ROA) and explanatory variable are government stock, shares and debenture, loans & Mortgages, real estate, other investments and other assets. The total observation for each dependent and independent variable was 40 (data for all pension funds aggregated by IPEC for the period from the year 2010 to 2018). The decision to include year 2010 as the beginning period was motivated by the fact that the Zimbabwean economy was very stable in that period. The descriptive statistics include mean, median, maximum, minimum and standard deviation of all study variables.

4.1.1 Response rate

The response rate from a sample of 10 years annual reports of IPEC and other publicly available information concerning assets allocation in Zimbabwean Pension Funds was satisfactory. All the required information for the study was obtained using content analysis from IPEC' annual and quarterly reports. The response rate is consistent with Grays (2009), who postulated that where the researcher distributed the questionnaire whether physically or by email the response rate is high.

4.2 Descriptive Summaries

Table 4.1 Descriptive Statistics

Variables	Obs	Mean	Std.Dev.	Min	Max	p1	p99	Skew.	Kurt.
Gvtstock	40	11.353	8.198	.03	25	.03	25	.188	1.778
ShareDeb	40	21.645	17.166	.12	57	.12	57	.884	2.64
LoansMorg	40	7.464	6.91	0	17.46	0	17.46	.329	1.37
RealEstate	40	25.109	18.205	.23	55	.23	55	.147	1.638
Cash	40	6.754	5.66	.108	19	.108	19	.746	2.782
Otherinvest	40	8.85	7.773	.063	32.85	.063	32.85	1.893	5.949
Otherassets	40	10.873	8.489	.18	31.2	.18	31.2	1.499	4.217
ROA	40	12.921	9.095	.076	32.245	.076	32.245	.246	2.175

Table 4.1 shows descriptive summaries of all variables. The dependent variable ROA has a minimum value of 0.076 and a maximum of 32.245 as measured by the percentage of total income over total assets. This suggests that performance of pension funds in Zimbabwe was somehow very low at times and rose sharply in the period under review to a maximum of 32.245. The mean value of ROA was 12.921 and a standard deviation of 9.095. The mean value of performance for pension funds is not reliable owing to a higher standard deviation from the mean.

Explanatory variables also have interesting results. The first explanatory variable to be examined was government stock with a minimum allocation 0.03 and a maximum of 0.25 allocations. This means that the results showed a fluctuating allocation of funds to this class. At one point in time, 3 percent of total Zimbabwean pension funds as a minimum and a maximum of 25 percent of the total assets. A mean value of 11.353 and a standard deviation of 8.198 suggest that allocation mean of assets in government stock was not reliable as shown by a larger standard deviation from the mean.

Another explanatory variable of the study was shares and debenture investment which showed a minimum value of 0.12 and a maximum value 0.57. This suggest that in a certain period, of

the total assets of Zimbabwean pension funds 12 percent was allocated to Shares & Debentures and a maximum of 57 percent in another period was allocated to assets. A mean value of 21.645 and a standard deviation of 17.166 suggest that on average total assets allocated were 21.645 but a higher deviation of 17.166.

Loans & Mortgages were used to predict pension fund performance in Zimbabwe. The results in Table 4.1 show a minimum value of 0.0 and a maximum value of 17.46. This means that there was a point in time during the course of the period when there were no pension fund assets allocated to Loans and Mortgages. The maximum amount of assets which were allocated to loans and Mortgages was 17.46 percent. The mean amount of assets allocated to Loans and Mortgages was 7.464 and a standard deviation of 6.91. A lower mean of 7.464 may suggest that pension fund managers do not favour allocation of pension fund assets to this class. Again, the mean value of loans and mortgages is unreliable as evidenced by a higher standard deviation.

Real Estate as the class of most interest in this study showed that the minimum amount of assets allocated to the class was 0.23 and a maximum value of 0.55. This means that a minimum of 23 percent of total pension fund assets was somewhat allocated to real estate investments. Again, in another year, it was about 55 percent which was allocated in real estates. These figures raise an expectation that management of funds has an expectation of better assets performance if they are allocated in real estates. Pension fund assets managers seem to be very much interested in Shares and Debentures and Real Estate investments very much more than any other class of pension assets as evidenced by maximum values recorded in these class which a very high relatively to other available class of assets. The mean value of Real Estate amount allocation was 25.109 which is again relatively higher. However, the standard deviation of this mean is relatively higher suggesting unreliability of the mean value.

Another explanatory variable of pension fund assets' performance is cash. A minimum of 0.109 of the total pension fund assets was once allocated in cash and a maximum allocation into cash being at 0.19. This means that the allocation of assets into cash was not a lucrative allocation for pension fund managers as highlighted by minimum values and maximum values which are relatively lower during the period under review.

The mean value of assets allocated in cash was 6.754 and a standard deviation of 5.66.

Investments in other assets were also studied as explanatory variables and they recorded minimum values of (0.063 and 0.18) and maximum values of (32.85 and 31.2) respectively. These values also show that management have confidence in these class of assets as they recorded relatively higher allocations though not as high as Share and Debentures and Real Estate investments. However, a closer look into the minimum values of investment assets showed that it sometimes receives little attention among other classes of assets.

4.3 Parametric regression Assumptions and Diagnostic tests

Before conducting regression analysis, it has to be made sure that the data to be analysed follow certain guidelines which qualify the data for multiple linear regression tests. As an example, data which is not normally distributed cannot be used for multiple linear regression. This section of the study takes a look at a number of parametric regression assumptions and goes on to conduct some diagnostic tests to ensure that the data actually meet the requirements for multiple linear regression to be carried out on it. Diagnostic tests are made to make sure that the classical linear regression model assumption is violated or not. In this study an attempt is made to test Heteroscedasticity, Normality and Multicollinearity. The results of which are presented and discussed as follows.

4.3.1 Heteroscedasticity

It is a test made to check whether error terms variance is constant (homoscedasticity) or not (heteroscedasticity). To test for the presence of heteroscedasticity, the popular Bruesh-Pagan test was employed (Brooks 2008). One of the important assumptions of the multiple regressions reveals that the variance of the disturbance term is constant. This is called the assumption of homoscedasticity. If disturbance terms (errors) do not have constant variance, they are said to be heteroscedastic (Gujarati, 2004).

In this case as presented in Table 4.2, both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity in this particular study, since the p-values are considerably in excess of 0.05. Therefore, the null hypothesis that the variance of the errors is constant (homoscedasticity) should not be rejected.

Table 4.2; Het Test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of ROA
Chi2(1)   =   1.61
Prob > chi2 =   0.2045

In STATA, and for the Het Test, the null hypothesis, H0, is rejected when the Chi square test statistic p-value is less than 0.05 and the alternative hypothesis is accepted. On the contrary, if the Chi square test statistic is greater than 0.05 then the null hypothesis is accepted and the alternative hypothesis, H1, is rejected.

H0: The variance of the errors is constant (homoscedasticity)
H1: The variance of the errors is not constant (heteroscedasticity)

For this study, as Table 4.2 clearly shows, the p-values of chi square test statistic is greater than the threshold of 0.05 (it is actually 0.2045) therefore the alternative hypothesis, H1, is rejected, and the null hypothesis, H0, is accepted indicating that the variance of the errors in the data is constant thus satisfying the requirements for homoscedasticity. Therefore, the data from this study is fit for multiple linear regression.

4.3.2 Normality Test

The other classical linear regression model assumption is the normal distribution of the residual. The classical normal linear regression model assumes that each variable is distributed normally with mean and standard deviation values are near to 0 and 1 respectively Gujarati (2004). To test the normality assumption in this study the researcher applied the Jarque-Bera (JB) test.

As noted by Brooks (2008) JB uses the property of a normally distributed random variable that the entire distribution is characterised by the first two moments, the mean and the variance.

The standardised third and fourth moments of a distribution are known as its skewness and kurtosis. Skewness measures the extent to which a distribution is not symmetric about its mean value and kurtosis measures how far the tails of the distributed (see results in Table 4.1). If the residuals are normally distributed, the histogram should be bell-shaped and the Jarque-Bera statistic would not be significant. This means that the p-value given at the bottom of the normality test screen should be bigger than 0.05 to not reject the null of normality at the 5% level.

As clearly plotted in figure 4.3 the normality test for this study shows a p-value of Jarque-Bera 0.23 which is greater than 0.05 and the histogram is also bell-shaped implying that the residuals of this study are normally distributed.

Table 4.3: Normality Test of Error Term

Mean	3.00e-16
Median	0.414786
Maximum	0.255739
Minimum	-0.346616
Std. Dev.	0.610877
Skewness	-0.030567
Kurtosis	0.1344567
Jarque-Bera	1.451870
Probability	0.233872

Series: Standardised Residuals

Sample 2010- 2018

Observations 40

For the data to be normally distributed, the p value of the JB test statistic needs to be greater than 0.05.

H0: Data is normally distributed

H1: Data is not normally distributed

As can be seen from Table 4.3 above, it is apparent that the p-value of the JB test statistic is 0.234 which is greater than 0.05 therefore we reject the alternative hypothesis, H1, which says that the data is not normally distributed and instead we accept the null hypothesis, H0, which stipulates that the data is normally distributed hence the data from this research qualifies for multiple linear regression analysis as the data follows a normal distribution.

As indicated above, Skewness and Kurtosis can also be used to ascertain whether the data is normally distributed or not. The Skewness and Kurtosis values can be employed in the measurement of normality. According to Kline (2015), data is deemed to be normally distributed if the Skewness and Kurtosis values are within the range of +2 and -2.

As can be depicted from Table 4.3, the Skewness value for the data used in this study is -0.03 which is between -2 and +2. Moreover, as Table 4.3 clearly highlights, the Kurtosis value of the data obtained for this study is 0.134 which is also between the range of +2 and -2 hence the data presented in this research meets the requirements for normality as indicated by Kline (2015). Therefore, multiple linear regression analysis can be carried out on the data as it is normally distributed.

4.4 Correlation Analysis

Correlation measures the relationship between two variables. This current study employed the bivariate correlation test using Pearson's moment correlation coefficient, r. If r is 1 then there exists a perfect positive relationship between the variable and if r is -1 there exists a perfectly negative correlation relationship between the variable. Having a positive correlation means that an increase in one variable with result in an increase in the other variable and vice versa. Negative correlation values signify that an increase in one variable will result in a decrease in the other variable and vice versa. A Pearson correlation coefficient of 0 means that there is no relationship between the variables (Badshah, 2012).

Fig 4.1: Correlation Coefficient Scale (Badshah, 2012)

Correlation Coefficient Scale

+ r values	Positive	− r values	Negative
1.0	Perfect +	−1.0	Perfect −
.8 to .99	Very strong+	−.8 to −.99	Very strong−
.6 to .8	Strong +	−.6 to −.8	Strong −
.4 to .6	Moderate +	−.4 to −.6	Moderate −
.2 to .4	Weak +	−.2 to −.4	Weak −
0 to .2	Very weak +	0 to −.2	Very weak −

The purpose of correlation matrix in this particular study was to show the linear association between the dependent and independent variables. As noted in Brooks (2008), correlation between two variables measures the degree of linear association between them. Values of the correlation coefficient are always range between positive one and negative one. A correlation coefficient of positive one indicates that a perfect positive association between the two variables; while a correlation coefficient of negative one indicates that a perfect negative association between the two variables. A correlation coefficient of zero, on the other hand, indicates that there is no linear relationship between the two variables.

Table 4.4 Matrix of correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Gvtstock	1.000							
(2) ShareDeb	0.487	1.000						
(3) LoansMorg	0.685	0.705	1.000					
(4) RealEstate	-0.023	-0.011	-0.193	1.000				
(5) Cash	0.192	0.195	0.022	-0.274	1.000			
(6) Otherinvest	0.370	-0.119	0.228	0.170	0.279	1.000		
(7) Otherassets	-0.283	-0.377	-0.377	0.532	-0.433	-0.251	1.000	
(8) ROA	0.235	0.084	-0.128	0.094	0.241	0.125	-0.141	1.000

Table 4.4 shows the correlation between the dependent variables and other independent variables. The strongest relationship between the dependent and independent variable exists between (ROA & Loans and Mortgages, 0.685) and between (Shares & Debentures and ROA, 0.487). All other variables have shown a very low correlation with ROA.

Across the matrix of correlation values, the strongest relationship was found between Shares& Debentures and Loans & Mortgages, (0.705) and between real estates and other assets with (0.532). Despite such higher values in the matrix, the relationship shown in Table 4.4 for all variables is still within the acceptable range. Any correlation above 0.8 is not acceptable since it shows higher correlation. This means that those variables maybe predicting the same on the dependent variable and therefore, one of those variables should be dropped. In this case, no any single variable was dropped.

4.5 Regression Results

After analysing the results of the correlation between the variables, the researcher conducted a regression analysis as correlation analysis simply measures the strength of the relationship between independent variables and dependent variables whilst it does not determine the predictive relationship between variables. Inorder to determine how various assets class allocations (independent) variables predict performance of pension fund which is the dependent variable used in regression model.

The regression analysis is one of the most widely used statistical methods in social science disciplines applications (Badshah, 2012), claimed that a statistical method enables the researcher to predict the value of one variable based on the value of another or more variables. He added that when the regression analysis is run, a regression equation that predicts the dependent variable's value through the independent variables' arises.

Explanation of the p-value and Beta

P-value is the probability of seeing a result as extreme as the one a researcher is getting (a t value as large as the researcher's) in a collection of random data in which the variable had no effect. A p-value of 5% or less is the generally accepted point at which to reject the null hypothesis. With a p-value value of 5% (or .05) there is only a 5% chance that results the researcher will be seeing would have come up in a random distribution, so he/she can say with

a 95% probability of being correct that the variable is having some effect, assuming the model is specified correctly.

Beta is also known as the coefficient. In simple or multiple linear regression, the size of the coefficient for each independent variable gives the size of the effect that variable is having on the dependent variable, and the sign on the coefficient (positive or negative) gives the direction of the effect.

Beta, b = r*(Sy/Sx)

Beta is basically the slope of the line showing the relationship between the independent variable and the dependent variable.

The interpretation of the multiple linear regression analysis conducted for this study is a s follows:

Other assets

H0: There is a significant relationship between other assets and ROA

H1: There is no significant relationship between other assets and ROA

Other investments

H0: There is a significant relationship between other investments and ROA

H1: There is no significant relationship between other investments and ROA

Cash

H0: There is a significant relationship between cash and ROA

H1: There is no significant relationship between cash and ROA

Real Estate

H0: There is a significant relationship between real estates and ROA

H1: There is no significant relationship between real estate and ROA

Loans & Mortgages

H0: There is a significant relationship between loans & mortgages and ROA

H1: There is no significant relationship between loans & mortgages and ROA

Shares & Debantures

H0: There is a significant relationship between shares & debantures and ROA

H1: There is no significant relationship between shares & debantures and ROA

Government Stock

H0: There is a significant relationship between government stock and ROA

H1: There is no significant relationship between government stock and ROA

Decision criteria: Reject H0 if p-value is greater than 0.05

As can be depicted from Table 4.5 below, Governement Stock and Loan & Mortgages are the only two variables with p-values of less than 0.05 thus indicating that they have significant relationships with ROA as far as the portfolio of the Zimbabwe Pension Fund is concerned. Real estate and all the other indepepndent variables have p-values of more than 0.05 thereby highlighting that their individual relationships with ROA in the portfolio of the Zimabbwe Pension Fund are insignificant. However, the Beta scores, or Coefficients, can be used to measure the impact of the significant and insignificant relationships between the independent variables, the different assets classes in the portfolio of the Zimbabwe Pension Fund, and the dependent variable, ROA.

The results from the regression analysis shown in Table 4.5 show that the goodness of fit is satisfactory with an (Adjusted R Square= 0.805). This implies that the factors that influence pension fund performance explain about 80.5% of the causes as indicated by the predictive power coeficient of 0.805. As a result 19.5% of the causes of pension fund performance remains unexplained.

Table 4.5: Linear regression

ROA	Coef.	St.Err	t-value	p-value	Sig.
Otherassets	-0.124	0.257	-0.48	0.633	
Otherinvest	0.190	0.307	0.62	0.541	
Cash	-0.055	0.335	-0.16	0.872	
RealEstate	-0.018	0.130	-0.14	0.890	
LoansMorg	-1.179	0.462	-2.55	0.016	**
ShareDeb	0.227	0.182	1.25	0.222	
Gvtstock	0.613	0.242	2.53	0.017	**
_cons	10.332	4.747	2.18	0.037	**

Mean dependent var	12.921	SD dependent var		9.095
R-squared	0.805	Number of obs		40.000
F-test	2.008	Prob > F		0.085
Akaike crit. (AIC)	290.555	Bayesian crit. (BIC)		304.066

*** p<0.01, ** p<0.05, * p<0.1

$$P_i = \beta_0 + \beta_{1log}\,RealEstate_i + \beta_2 LoansMortg_i + \beta_3 ShareDeb_i + \beta_4 GvtStock_i +$$
$$\beta_5 log\,Otherinvest_i + \beta_{6\,Otherassets} + B_7 Cash + \mu_i$$

4.6 Discussion of findings

The results of this study are broadly consistent with those of prior studies, regarding the relationship between assets allocation and fund performance.

4.6.1 Real Estate

At 0.05 level of significance, there is negative insignificant relationship between asset allocation in real estate class and performance of pension funds (t-value -0.14, p=0.890). This means that if a fund allocates more of its assets in real estate, the performance of that fund as measured by ROA will decrease. However, the variable was found to be statistically

insignificant. Reading these results with descriptive summaries in mind, it is clear that management of Zimbabwean pension fund favours to allocate more of its assets in real estates and share &debentures. Therefore, both classes show an insignificant influence on fund performance. It can easily then be concluded that Zimbabwean pensioners are likely to continue in losing their life time savings owing to poor assets allocation by fund managers. Similar results have been obtained by (Oslen, 2015).

Another school of thought from (Vaan Loon Aalbers, 2017) suggests that this may be caused by excessive costs associated with managing unlisted real estates. Therefore, pension funds should be invested in traditional liquid and fixed income securities. Real estate assets are sounding to be a very risky class of assets to be used for improving pension fund assets. Contrastingly, recent trends in Zimbabwe have shown higher percentage allocation of pension fund assets in such classes.

4.6.2 Government Stock

Interesting results have been obtained from this variable at 0.05 significance test. Government stock was found to be positive and significantly related with pension fund performance (t-value 2.53, p=0.017). This suggests that if managers of pension fund invest their assets in government stocks, their performance will increase positively and significantly. Government stocks though being a traditional class of investment asset, it is less risk and it enhances the wealth of pension funds.

4.6.3 Shares and Debentures

Shares and Debentures had interesting results at 0.05 significance level. Shares and Debentures asset allocation class is positive and insignificantly influences the performance of pension funds in Zimbabwe with (t-value 1.25, p=0.222). This means that if pension fund managers choose to invest pension assets on company shares or buy long term Debentures, the value of the pension fund will insignificantly increase. Equity premiums have been considered to be high risk investment in literature (OECD, 2015; Munnel, 1998). Equity investments sound to be too volatile and their returns have been lowered and pension fund managers have since considered alternative assets allocation classes. In Zimbabwe, results presented in Table 1 above showed that pension fund managers have been favouring this class of asset despite

lowering returns as suggested by literature. Contrastingly results have been found on Japan as its government shifted from fixed income classes to equities and bonds at a rate of 50/50 (OECD, 2015).

4.6.4 Loans and Mortgages

At 0.05 level of significance, there is a negative significant relationship between loans & mortgages with pension fund performance (t-value -2.55, p=0.016). This means that an increase in the allocation of assets in loans and mortgage class will lower down the performance of pension fund. In their study (Arslanagic, 2016; Harrison, 2012), established that loans have significant positive influence on pension fund performance owing to its fixed interest rate returns. Therefore, this study's results are contradicting with prior results of Harrison (2012) and Arslanagic (2016).

4.6.5 Cash

Results on cash as another explanatory variable of pension fund performance showed that there is a negative and insignificant relationship between cash asset allocation class and performance (t-value -0.16, p=0.872). This means that if pension fund managers allocate pension fund assets into cash, the overall performance of the asset class will decrease though statistically insignificant.

4.6.6 Other assets and investments

At 0.05 level of significance, results in Table 4.5 revealed that other assets and other investments have a negative and positive (respectively) and insignificance relationship with pension fund performance (t-values -0.48, p=0.633; and t-value 0.62 p=0.541). These results suggest that other assets are riskier since they present an inverse relationship with pension fund performance. On the other hand, other investment as a class of assets allocation has a positive and insignificant relationship with pension fund performance.

4.6.7 Results from the interviews and questionnaires

Most fund managers indicated that most pension funds are heavily invested in Real Estate to the effect that they are failing to pay pension benefits. There is a diverse opinion on the set asset allocation by the regulator.

4.7 Chapter Summary

This chapter discussed the findings of the research and it was noted factors with the highest power of determining the performance of pension funds are the level of government stock and loans and mortgages. All other assets classes were found to be insignificant in influencing pension fund performance including real estate. The next chapter focuses on the conclusion and recommendations.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.0   Introduction

This chapter details the achievement of the research aims and objectives, outlines the contribution of this research to the economy at large and to the pension sector specifically. A conclusion of the research will be highlighted and recommendations will be given while the limitations to the research will be mentioned. Areas of further study will be highlighted in this chapter**.**

5.1   Achievement of research aim and objectives

The aim of the research was to investigate how different asset allocation (represented by Government Stock, Real Estate, Cash, Shares & Debentures, Loans & Mortgages and Other assets and investments) as independent variables that determine pension fund performance. By and large, the study has endeavoured to and indeed addressed the research aim and objectives in appropriate level of detail, effectively exhausting the association between different assets class in pension fund and pension fund performance. This has been achieved through exhaustion of the underlying theoretical constructs, elaborate and robust data analysis and obviously using tables and charts to show and depict results. The study revealed results of each variable under investigation and its contribution towards ROA.

Objective 1: To establish the performance of real estate investment relative to other assets in the portfolio of the Zimbabwean Pension Fund

The first objective was to establish the performance of real estate investment relative to other assets in the portfolio of the Zimbabwe Pension Fund. Based on the multiple linear regression results obtained from STATA software on the panel data collected between 2010 and 2018, it became apparent that real estate investment performs poorly in terms of ROA as compared to other assets of the portfolio of the Zimbabwe Pension Fund. An insignificantly negative relationship between real estate investment and ROA was established. Instead, government stock had a significantly positive relationship with ROA in the portfolio of the Zimbabwe Pension Fund and loans and mortgages had a significantly negative relationship with ROA.

Objective 2: To establish the degree of association between real estate and the other asset classes

The second objective assessed the degree of association between real estate and other asset classes and from the correlation, Table 4.4, it can be noted that real estate had positive linear relationships with only 2 other variables investigated in this study. Real estate had a weak positive relationship with other investments with a Pearson moment correlation coefficient, r, of 0.17 and had a fairly moderate positive relationship of r = 0.532 with other assets. Real estate had weak negative relationships with all the other asset classes in the Zimbabwe Pension Fund portfolio.

Objective 3: To compare the performance of the portfolio of the Zimbabwe Pension Fund with and without the real estate asset

The third objective of this study was to compare the performance of the Zimbabwe Pension Fund portfolio with and without real estate. Since from the regression equation derived from the results shown on Table 4.5, it can be noted that without real estate, ROA of the portfolio of Zimbabwe Pension fund will be slightly higher since Real estate has a negative Coefficient.

Objective 4: To establish the optimality level of the Zimbabwe Pension Fund portfolio with and without real estate

Therefore, and now leading to objective 4 of the study, the portfolio of the Zimbabwe Pension Fund would not significantly improve and have a higher ROA without real estate for the reason mentioned under the analysis of objective 3 above. Moreover, for attaining optimality level of the Zimbabwe Pension Fund, real estate and all other variables with negative coefficients have to be eliminated from the portfolio. In terms of the highest return, Zimbabwe Pension Fund would be better off only investing in Government stock as the relationship between ROA and Government stock is significantly positive.

However, this would be contrary to investment and portfolio management theories which talk of spreading risk and not putting all eggs in one basket hence the optimal asset allocation portfolio for Zimbabwe Pension Fund which will yield a higher ROA would consist of Government Stocks, Shares & Debentures and other investments as all these have positive

coefficients on Table 4.5 above albeit Shares & Debentures and Other Investments having insignificantly positive relationships with ROA.

Objective 5: To establish factors affecting choice of real estate as an investment option by pension funds in Zimbabwe from 2010 to 2018.

Objective 5 which was to establish factors affecting choice of real estate as an investment option by pension funds in Zimbabwe from 2010 to 2017, was also met through the findings from qualitative research done through interviews of pension fund managers in Zimbabwe.

5.2   Conclusion

The significant conclusion drawn from this study is that there is a strong relationship between Government Stocks and Loans & Mortgages and pension fund performance as evidenced by the following conclusions to the research objectives. Therefore, this suggests that pension fund managers should continuously invest in information search concerning movement of these assets in determining amount to be specifically allocated to each class. Conversely, pension funds which do not invest in that information are likely to experience lower performances relatively to their assets.

5.3   Answer to research questions

The main question of the research was concerned about how fund managers allocate pension assets as a way of improving pension fund performance. The research question was answered by highlighting the assets class which have positive and negative significance influence on pension fund performance. The relationship between Government Stock and pension fund performance was found to be positive and significant, the effect of Loans and Debentures was found to be negatively related and significant to pension fund performance.

5.4   Contribution

The study has contributed immensely to the following areas that are to theory, methodology and empirical literature.

5.4.1 Empirical contribution

Literature review uncovered that a lot of studies have been carried out both in developed and developing nations to test the relationship between assets allocation in pension and performance. Again, literature suggested that some variables are significant while some are insignificant from other countries context. No similar studies have been carried out in Zimbabwe to test the relationship between pension fund assets allocation and performance. Therefore, literature was weak, since it was not providing insights from developing nations particularly Zimbabwe and results of the significance of some assets classes. This research was carried out as an attempt to fill in the currently existing gap in the already existing literature

5.4.2 Policy recommendations

The IPEC has to come in to enforce rules to reduce allocation of pension fund assets in riskier classes. IPEC should introduce stringent penalties such as revoking the trading licence if such regulations are breached just to send a strong message.

5.5 Managerial recommendations

It is important for fund managers in pension companies to know that the way assets of a pension fund are invested should not follow random theory where by the managers may think that if he/she allocates assets of pension fund randomly, then performance will be enhanced. Managers should take care of the contribution and behaviour of each class of pension fund assets and its influence on pension fund performance.

5.6 Generalisation of findings

The study managed to unearth the relationship between various assets' classes and pension fund performance. The research findings revealed that Government stock and Loans & Mortgages have significant effects on pension fund performance. Furthermore, the objectives of the research were fulfilled, judging from the findings of the research. The findings of the study can safely confirm the main hypothesis of the study which was, real estate investment influence pension fund performance.

5.7   Research limitations

The major limitation was the time limited frame in which the research had to be carried. The second limitation was the difficulty in obtaining information from the respondents that had initially been identified for the research. The research was a survey which only focused on Zimbabwean Pension fund only. The results may be inconclusive since more solid inferences may be made by looking at a number of similar organisations to evaluate relationship organisational pension fund assets allocation and firm performance.

5.8   Areas of further research

In future, a study may be carried out through questionnaires so that those charged with responsibility concerning assets allocation maybe asked for them to give their opinion or logic behind the way they allocate these pension fund assets among competing assets classes. Again, a comparative study is necessary to investigate how other countries in SADC are allocating their assets among various pension fund assets allocation before a concrete decision can be made in Zimbabwe. Maybe the reason for poor performance of pension fund can be explained by macro factors such as GDP as opposite to assets classes. Therefore, a further study may examine how economic determinants may affect pension fund performance.

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Appendix 1

Study Interview Guide

This research is to assess the returns on the investments on Real Estate. Your participation is cordial and critical to the success of the project. Any information provided will solely be used for academic purpose, and any information provided would be treated with utmost confidentiality.

1) When management allocates pension fund across different investment portfolios, what factors if any or criteria do they use?

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2) Are there any regulations which are considered by management when allocating pension fund assets? If yes explain how such regulations influence allocations.

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3) What governance mechanisms are available in managing pension funds?

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4) How pension funds modify their asset allocation policy over time in response to maturing member population and declining interest rates, and whether the changes in strategic asset allocation policy depend on the differences in regulation of liability discount rates?

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5) Is there any relationship between risk taking, maturity, and inflation protection in real estate investment? If yes, explain the relationship.

6) What proportions of the investment portfolio are managed in local and foreign currencies?

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7) Does your organization have an investment policy? (tick appropriate box) Yes [ ] No [ ]

8) What are some of the strategies used in the management of the funds?

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9) What are some of the challenges encountered in the investment of your pension funds?

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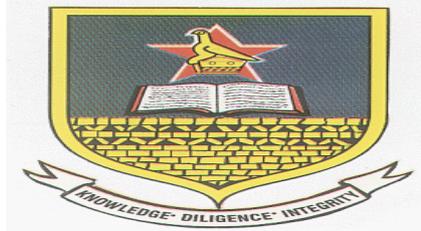
The Responded

RE: QUESTIONNAIRE ON AN MBA RESEARCH – THE IMPACT OF REAL ESTATE PERFORMANCE ON THE PERFORMANCE OF A PENSION FUND

I am enrolled as a graduate student at the University of Zimbabwe, Graduate School of Management and I am studying for a Masters of Business Administration Degree. I am carrying out a research on the impact of real estate performance on the performance of pension funds in partial fulfilment of the programme.

The results of the study are expected to inform decision makers (management, policy-makers and academia) on the best way to invest pension funds. The Regulatory authorities will be given a measure to regulate on investment of pension funds basing on the results of the research.

Please assist in completing this questionnaire and note that the survey will be treated confidentially.

Thank you for your participation and you are free to request for a summary of the findings.

Yours faithfully

Blessing Mashingaidze – Chinosengwa.

STUDY QUESTIONNAIRE

General Instructions:

I. Please tick a box that appropriately represents your response in each of the following questions.

II. To the questions with alternatives that do not match to your response, please write your appropriate response on the space provided

SECTION A: Respondent's Demographic Details

1. Gender of the person filling the questionnaire (please tick the appropriate)

    Male [ ]   Female [ ]

2. Tick your age bracket

   19 years - 24 years   [ ]
   25 years - 29 years   [ ]
   30 years - 34 years   [ ]
   35 years - 39 years   [ ]
   40 years - 44 years   [ ]
   45 years +   [ ]

3. What is your Current Position in the Organisation?

   Fund Manager   [ ]
   Principal Officer/General Manager [ ]
   Administrator   [ ]
   Investment Officer   [ ]
   Finance Manager   [ ]

Other	
Specify	

4. Experience.

For how long have you been working for this organization?

1 years - 5 years	
5 years - 10 years	
10 years - 15 years	
15 years - 20 years	
20 years - 25 years	
25 years +	

5. What is your highest level of education?

Secondary	
College Certificate	
College Diploma	
University Degree	
Professional Course	

Section B: Data Gathering

1. In which category are your pension funds allocated and at what amounts?

	Tick the Applicable	Amount Allocated to each category
		$
Cash		
Bonds		
Loans		
Equities		
Real Estate		

If your organization has invested in another class of assets not shown above, please specify

Other 1…………………………………………

Other 2………………………………………….

2. Asset allocation

Please tick the most suitable answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2.1 The current 50% maximum investment allocation by IPEC to real estate enhances the performance of pension funds.					
2.2 The current 50% maximum investment allocation to equities by IPEC enhances the performance of pension funds.					
2.3 The current 40% maximum investment allocation to bonds enhances the performance of pension funds.					
2.4 Allocation of 10% of the investment to cash enhances the performance of pension funds					
2.5 The fund meets IPEC's regulatory requirements in real estate asset allocation					
2.6 The diversification of the Fund's assets minimizes the risk of huge losses within any one asset class					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2.7 Asset allocation is not the only factor affecting the performance of the fund.					

Section C: Real Estate Performance

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Property yield affects the overall performance of the pension fund.					
2. Property occupancy affects the performance of real estate					
3. Property location affects the performance of real estate					
4. Property ambiance affects the performance of real estate					
5. Property use determines the return on investment					

Section D

Pension Fund Pension Performance

	$ 2016	$ 2017	$ 2018
Total revenues			
Total profit before Tax			
Total assets			
Capital Employed			

If you have any other information you can detail it on the space provided below

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What measures are you taking to improve performance?

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THANK YOU FOR YOUR VALUABLE TIME AND INPUT IN COMPLETING THIS QUESTIONNAIRE. YOU HAVE MADE A GREAT CONTRIBUTION TO THE OUTCOME OF THIS RESEARCH.