THE EFFECT OF RISK MANAGEMENT PRACTICE ON PERFORMANCE OF PENSION SCHEMES IN KENYA

BY

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DECLARATION

This research project is my original work and has not been presented for any award of degree in any other university.

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DEDICATIONS

This work is dedicated to my family and friends who encouraged me to reach this far.

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ACRONYMS AND ABBREVIATIONS

BOT : Board of Trustees

CBA : Cost Benefits Analysis

CBK : Central Bank of Kenya

COSO : Committee of Sponsoring Organization of the Tread way Commission

CRO : Chief Risk Officer

DB : Defined Benefits

DC : Defined Contributions

ERM : Enterprise Risk Management

EWRM: Entity Wide Risk Management

IOPS : International Organization of Pensions Supervisors

ISO : International organization of Standardization

NCLR : National Council for Law Reporting

NSSF : National Social Security Fund

KRBA : Kenya Retirement Benefits Authority

KRA : Kenya Revenue Authority

OECD : Organization of European Community for Development

PSPS : Public Service Public Scheme

RMS : Risk Management Strategies

RoK : Republic of Kenya

SPSS : Statistical Package for Social Sciences

ABSTRACT

Pension Schemes are the main sources of retirement income for millions of people in the world. Pension Schemes are also important contributors to the gross domestic product (GDP) of countries. This study focuses on pension Schemes in Kenya. Retirement income accounts for 68% of the total income of retirees in Kenya, while pension assets account for 30% of Kenya's GDP. It is therefore important risk management practices of pension Schemes be managed effectively, not only in Kenya, but also in other countries. The primary objective of the study is to determine the effect of risk management practices to performance of Pension schemes in Kenya. More specifically, the study explores the effect risk management environment, risk measurement; risk mitigation and Internal Controls had positive effects on the performance of pension schemes in Kenya. A sample of 64 pension Schemes was drawn from the Kenyan Retirement Benefits Authority (RBA) register. The sample selection was based on the criterion that these pension funds should have been in existence within the period 2009 to 2013.This study used empirical design to investigate how pension scheme risks management practices affect performance of pension schemes by use of Sharpe Ratio. . Eighty (80) questionnaires were mailed to the trustees of these pension schemes. Sixty four (64) usable questionnaires were returned, which translated into a response rate of 80 per cent and historical monthly performance or returns data for all investments used i.e. fixed income, equities and offshore. Risk adjustment measures of Standard Deviation and Sharpe Ratio were applied to test the riskiness of the investments. Analysis of the data collected was summarised using tables in order to derive the study findings. Accordingly, the study viewed risk-returns in terms of the ratios and returns as per the sectors in investments for Pensions Funds in 64 schemes in Kenya. The initial analysis showed that there is a link between the asset allocation and risk factor at all the schemes with a high mean of 1.64%. However, the difference in returns for the various schemes seems to be insignificant. This implies that the assumed risks by policy makers might not have existed, but to be sure of the relationship between risk return and decision making, the regression results were clearly indicative that the variables can be linked. The study concludes that investment decisions should be based on the best estimates of as it remains a factor in the calculation of returns and is therefore prudent to use risk measures such as Sharpe Ratio in making investment decisions. Policy makers such as RBA, CMA, CBK and Ministry of Finance should review impact of risk on market development.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Pension Schemes performance depends strongly on competition and the regulation environment, which may result in incentives for consolidation and portfolio restrictions. Active investment management helps to keep markets efficient and to ensure the flow of funds to the most successful enterprises, as well as playing a major role in the allocation of resources within the economy (Bauer, Koedijk and Otten, 2005). Pension Schemes management companies are particularly important in this respect in contemporary economies given the increase in the size of the aged and retired populations and the consequent problems in guaranteeing the financial sustainability of social security (Davis, 1995).

An increasing number of African countries have recently initiated reform of their pension and social protection systems. Over the last decade, Kenya has also undertaken a major reform of parts of its pension system. Whereas the primary motivation for reform of pension systems in many countries worldwide has been to address the growing fiscal burden of pension liabilities, in Kenya the major driver for reform was to strengthen the governance, management and effectiveness of the existing pensions system (Raichura, 2008). Pension Schemes are the principal sources of retirement income for millions of people in the world (Sze, 2008). They are also important contributors to the GDPs of countries and a significant source of capital in financial markets (Omondi 2008). A global pension crisis has however emerged in the past two years owing to depressed financial markets. This has eroded funds to cater for the retirement income of the ageing populations (OECD, 2008). It is therefore important that pension Schemes be managed effectively.

Over the past three decades, the living condition of older persons in Kenya has deteriorated. This is as a result of the erosions of their economic power, changes in the family structures and roles, particularly on the care of older members of the immediate family unsustainability of the pension schemes and inability of government to fulfill her expected role in the care and support of older persons in the community (Reynaund, 2000). Worldwide older persons are regarded as vulnerable group, hence, it has been

accepted that older persons, the children and women are in dare need of government attention. This is because poverty affects this class of people than any other categories in contemporary world especially in developing countries. Various efforts by various successive regimes in the country to address the needs of older members of the society have proved abortive. We have seen several organizations coming in to rescue the situation. A good example could be World Health Organization which helps supply food for this unfortunate group of individuals. However, the emergence of full-fledged reforms on introduction of Retirements Benefits Authority (RBA) in 1997 has rekindled the hope of older persons.

The need for better managed pension Schemes in many countries has been necessitated by growing populations around the world. Most countries both developed and developing are experiencing increasing longevity in life expectance and reduced fertility rates that seem to threaten the sustainability of traditional pay-as-you-go pension systems. The pension contributions from the working population will not be sufficient to support the elderly. In response, countries are increasingly shifting their pension systems toward partial or full funding. In addition to the main purpose of coping with demographic pressures and unsustainable fiscal positions, other motivations for countries to reform their pension systems often include the hope that funded pensions will contribute to economic development by promoting national savings and capital market development (Meng & Pfau, 2010).

1.1.1 Risk Management Practices

Wiedenmann (2005) define risk as situations in which it is possible but not certain that some undesirable event will occur. Risk Management practices is defined as the process, effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives (COSO, 2004). Managing risk involves setting appropriate risk environment, identifying and measuring the pension schemes risk exposure, mitigating risk exposure, monitoring risk and constructing controls for protecting the pension schemes from risk. To do this, pension Schemes should have appropriate risk management policies that safeguard the replacement rate, investment safety and time-based risks such as inflation (Davis 2000).

According to Galer (2009), risk management by pension Schemes should link directly to portfolio objectives and should maintain a balance between assets and liabilities in the context of funding, immunization and the use of derivative securities. There is general agreement that proper risk management results in better financial results for pension Schemes as it focuses on a proactive approach to losses (Thompson 2008; Brunner, Hinz and Rocha, 2008; Odundo 2008).

The board and the senior management of the pension are responsible for creating the appropriate risk management environment. These include maintaining a risk management review process, appropriate limits on risk taking, adequate systems of risk measurement, a comprehensive reporting system, and effective internal controls. Procedures should include appropriate approval processes and limits and mechanisms designed to assure the pension's risk management objectives are achieved. Given this background, and the increasing impact of pensions on the business strategies of firms, it is natural to expect many risk management techniques used or available for use in the wider business and financial arena to be applicable to pension Schemes, this includes techniques associated with enterprise risk management. According to International Organization of Pension Supervisors (IOP), the coverage in terms of pension provision in Kenya less than 15% of the working population which is much lower than the leading countries such as Netherlands (80%), Australia 84% and Sweden 90% (IOPS, 2010). Kenya pension benefits provision in terms of coverage was ranked number 6 in Africa after Lesotho, Mauritius, Botswana, South Africa, Morocco (Ambrogio & Elisabetta, 2010).

Kenyan pension Schemes face a number of risks that may put in doubt their sustainability in paying adequate promised retirement benefits to their members and attainment of the economic pillar under the Kenya's long-term strategic plan vision 2030 which envisions Nairobi to be the financial sector hub in Africa (KRBA, 2011). The pensions industry is a key driver of mobilization and channeling resources for investment through the Capital Markets and thus influences the financial sector which constitutes the banking sector, capital markets sector and insurance sector (RoK, 2009). According to the Central Bank of Kenya Report (CBK), the Retirement Benefits Authority implemented a risk based supervision model which measures the level of compliance to the regulations by the registered pension's schemes by use of an interrogative questionnaire (CBK, 2011).

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1.1.2 Performance of Pension Schemes in Kenya

According to a definition perpetuated by Davis (1995), a pension scheme is a form of institutional investor, which collects pools and invests funds contributed by sponsors and beneficiaries to provide for the future pension entitlements of the said beneficiaries. The main purpose of pension Schemes is to provide means for individuals to accumulate savings during their productive or working life in preparation for financing of the consumption needs when they retire from active employment. Pension Schemes make payments to beneficiaries either by means of a lump sum or by provision of an annuity, while also supplying funds to end-users such as corporations, other households through secured loans or governments for investment or consumption.

According to OECD (2000), the ratio of total OECD pension schemes assets to GDP increased from 81.9% to 84.1% in 2004. In monetary value, pension schemes assets grew from US$ 5.9 trillion in 1994 to US$ 15.6 trillion in 2004, representing a compound performance rate of 10.2% per annum. According to Corbo and Schmidt-Hebbel (2004), the ratio of the pension schemes assets to the GDP grew by 46% in the Chilean economy over the period 1981 to 2001. In Kenya, pension schemes assets account for 30% of the GDP (Odundo, 2008).

According to Wyatt (2007), the performance of pension scheme assets amounted to 100% of the GDP in Australia, 80% in Canada, 10% in France, 12% in German, 36% in Hong Kong, 50% in Ireland, 75% in Japan, 130% in Netherlands, 147% in Switzerland, 98% in the United Kingdom and 108% in the United States of America in 2006. The performance of Pension schemes exerts both quantitative and qualitative effects on financial markets (Davis, 2006). Pension schemes increase offshore investments, which grow international financial markets thus contributing to greater stability of the economies as a result of increased capital flows (Davis, 2006). In addition, pension schemes increase equity market capitalization and bond market capitalization (Impavido et.al, 2003).

Earlier Kenyan Retirement Benefit Scheme first came into being after independence, this being the first post independent Retirement Benefit Scheme fund body, dubbed the National Social Security Fund (NSSF), which was established in 1965 (RBA2000).In the earlier Kenyan Retirement Benefit Scheme systems before reforms were done to the sector, the Retirement Benefit Scheme fund system provided for benefits once a worker

retired on attaining the mandatory retirement age of 55 (RBA2006). The guarantee was fixed as the worker's full basic salary throughout his life or that of the widow as the law did not imagine a situation where the wife would support the husband (NSSF Act); Pensions Act (Cap 189).RBA has been the regulatory arm of government that is tasked to regulate the Kenyan Retirement Benefit Scheme fund system since 2000, which oversees the 1997 RBA Act that brought about regulation, protection and structure to the Retirement Benefit Scheme fund industry. The RBA continues working to develop the industry and advise the government on Retirement Benefit Scheme policy reforms.

The Kenyan Retirement Benefit Scheme fund system has four components: NSSF; Civil Servants Pension Scheme (CSPS); Occupational Retirement Schemes (ORS); Individual Retirement Schemes. NSSF is a public provident fund (pays benefits as a lump sum) that covers an estimate of 800 000 members in both the formal and informal sectors and contributions to NSSF are mandatory for employees in firms with 5 or more employees, whereby members contribute 5% of their monthly earnings subject to a maximum of Ksh. 200 that is matched by an equal contribution by the employer ; however RBA allows the employees to contribute more on voluntary basis to a maximum of Ksh. 1,000 per month and that the old-age Retirement Benefit Scheme benefits are available to those aged 55 who have retired from active employment (Stewart and Yermo, 2009).

Civil servants pension schemes for the civil servants, judiciary employees, military personnel, armed forces, teachers and parliamentarians and CSPS provides benefits including old age pension, injury and compensation, survival benefits, dependency pension for 5 years after death of a pensioner, disability pension (military only) and gratuities in the form of lump sums. The CSPS had 125 000 members by December 2006 (Kakwani et al. 2006).

In a bid to accumulate retirement savings for their employees, ORS were established and in Kenya ORS are operated on Defined Benefit or on Defined Contribution Retirement Benefit Scheme structures though for Kenyan case, the Defined Contribution is the predominant design; even though it is not mandatory for employers to set up the ORS, once established, the fund falls under the mandate of the Retirement Benefits Authority and thus must comply with the laid down regulations. The ORS are estimated to cover an estimated 3% of the working population in Kenya (RBA 2008).

The Individual Retirement Schemes (IRS) are run by financial institutions, for the Kenyan case mainly by insurance companies which provide an avenue for saving where employers do not have their own schemes, and for workers who wish to make additional voluntary contributions; as at close of 2009, RBA had registered 21 IRS that covered an estimated 2% of the working population. IRS filled the gaps where the number of employees is so dismal to form an ORS that would render it not being financially viable owing to the small membership (RBA, 2009).

1.1.3 The relationship between Risk Management and Performance

What constitutes adequate risk management? Many in the asset management industry have long realized that risk management practices require codification. The Risk Standards Working Group set out in 1996 to create a set of best practice standards for institutional investment managers and institutional investors. The result was a document entitled "Risk Standards for Institutional Investment Managers and Institutional Investors" (1996). For a contemporary description, see also Bensman (1996). These guidelines consist of 20 Risk Standards that are prudent institutional investor should fulfill. The Risk Standards are grouped into three categories: management of risk, measurement of risk and oversight requirements.

Smith and Stulz, (1985) claims that risk management can reduce either the overinvestment or underinvestment costs resulting from the non-observability of managerial actions. The effectiveness of such policy is, in general, inversely related to the volatility of the cash flows generated by the firm. This negative relation in Smith and Stulz (1985) implies that firms will manage risk to decrease cash flow volatility because it reduces one of the costs related to managerial discretion in presence of information asymmetry for shareholders. Nance, Smith and Smithson (1993) notes that market imperfections such as taxes, financial distress costs, and investment opportunities are advanced in the literature to explain why firms manage risks.

According to the international Organization of Standardization (ISO) the risk management process has been presented as a list of coordinated activities consisting of; recognition of risks, ranking of risks, responding to risks, tolerate, treat, transfer, terminate, resourcing controls, reaction planning, reporting and monitoring risk performance reviewing the risk management framework (ISO, 2009).According to Krammer (2007) , an organization has a number of goals and objectives it can pursue,

thus can ultimately decide on those that best meet stakeholder preferences for growth, return, safety, sustainability and its willingness to accept risk.

1.2 Research Problem

Efficient risk management practices have been vital in allowing the phenomenal performance of Pension schemes. In response to this growing expectation for effective risk management across the entire enterprise, many leading organization are abandoning their traditional approach to manage risk by silos where risks are managed in isolation from one another and are adopting risk management practice (Lienberge and Hoyt 2003). Pension Schemes in Kenya are exposed to market risk, operational risk, governance risk, sponsor insolvency risk and counterparty fraud risk (KRBA, 2011). Thus the study is premised on effect of risk management practices on performance of pension Schemes to stem the tide of losses, fraud and ultimate collapse of occupational schemes in Kenya.

Several studies have addressed various aspects of pension Schemes, for instance Meng & Pfau (2010) carried out a study on the role of pension Schemes in capital market development at the stock and bond market level. Njuguna (2011) carried out a study on the determinants of pension fund corporate governance in Kenya. The study established that pension governance is influenced by pension regulations, leadership, and membership age. Despite the studies carried out on pension Schemes, there are no studies that have attempted to evaluate the risk management practices of pension Schemes in Kenya. Pension Schemes are a unique type of organizations because they hold long term liabilities which belong to beneficiaries. The risk management practices of pension Schemes, both public and private, has however come under increased scrutiny due to controversial projects they have invested public funds (Ngetich, 2012). Therefore this study seeks to evaluate the determinants of financial efficiency of pension Schemes in Kenya in order to bridge this gap.

1.3 Research Objectives

The study objective was to establish the effect of risk management practices on financial performance of pension Schemes in Kenya.

1.4 Value of the Study

The study findings will beneficial to policy makers who work for pension Schemes in Kenya to get a clear understanding on the factors that influence financial efficiency of

pension Schemes. This will be a form of benchmark for bets practice that will enable them to come up with policies that can enhance the performance of their Schemes. Pension schemes that adopt risk management strategic practices such as Enterprise Risk management (ERM) are able to better understand the aggregate risk inherent in different business activities and provide them with a more objective basis for resource allocation, thus improving capital efficiency and return on equity (Meulbroek, 2002).

Findings of this study will be a significant contribution to the existing literature on performance of pension Schemes. Since this is an area that has great potential of further growth and will attract further academic research, the findings will assist in providing reference materials for future researchers.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature on studies on the effect of risk management practices on performance of pension Schemes in Kenya. Literature review is presented in four sections: theoretical review, empirical review and critique of literature. Finally, the chapter highlights the gaps in literature that would be filled by the current study.

2.2 Theoretical Framework

Blumberg, Cooper and Schindler (2011) defines a theory as a set of interrelated concepts, definitions, prepositions that have been put forth to explain or predict a scenario. Bull (2009) notes that a theory is a set of constructs, prepositions and definitions of an organized view of phenomena by pointing the relationships among variables with purpose of explaining the phenomena.

This study hangers its variables on three theories namely: (i) Corporate risk management theory as it relates to pension schemes adoption of risks management practices) Stakeholders Theory and the cost benefits theory together used to explain the regulatory requirements (iii) Contingency theory and linkage on pension scheme size, (iv) Agency Theory which is linked with the Board of Trustees composition and the administration structure of a pension scheme.

2.2.1 Stakeholders theory

Brenner and Cochran (1991) study points out that stakeholder theory of the firm has two purposes: to describe how organizations operate and to help predict organizational behavior. They contrasted this theory, with other theories of the firm, but they did not ask whether the various theories cited have comparable purposes. Stakeholder theory has been used to describe the nature of the firm (Brenner & Cochran, 1991), to describe the way managers think about managing (Brenner &Molander, 1977), to describe how board members think about the interests of corporate constituencies and to describe how some corporations are actually managed (Clarkson, 1991; Halal, 1990; Kreiner and Bhambri, 1991).

According to Brenner and Cochran (1991) that stakeholder theory of the firm has two purposes: to describe how organizations operate and to help predict organizational behavior. They contrasted this theory, with other theories of the firm, but they did not ask whether the various theories cited have comparable purposes. From the stakeholder theory, it is recognized that an entities impact other entities and in turn impacts on other entities in the environment directly or indirectly. The major role of stakeholders such as employers, administrators, fund managers, custodian and government together with its regulatory arms in pension Schemes risk management cannot be understated. Therefore it can be argued that regulatory environment is necessary to bring order and sanity among the various stakeholders.

2.2.2 Agency Theory

According to Brown Governance Report (BG) the agency theory was formulated in by Adam Smith in the 1700's, categorizing the various groups into Principals (owners) are people with a knack for accumulating capital, while Agents (management) are people with a surplus of ideas to effectively use that capital (BG, 2004). The agency theory problem is that, agents often have ideas to use capital that lies outside the intent (purpose) of the principals and governance exists to address this agency problem (BG, 2004). Eisenhardt (2009) argued that agency theory is directed at the agency relationship, in which one party (the principal) delegates work to another (the agent), who performs that work. Eisenhardt (2009) suggests that agency theory is concerned with resolving two risks that can occur in agency relationships the first is the agency problem that arises when the desires or goals of the principal and agent conflict and the difficulty for the principal to verify what the agent is actually doing, the second is the problem of risk sharing that arises when the principal and agent have different attitudes towards risk.

The agency theory linkages can be depicted showing relationships between the Principals, Governors and Agents whereby; Governor's act as an intermediary (boards in corporations), voice of the agents to the principals and as the principal's representative (steward, trustee, fiduciary) with the agents ensuring capital is directed to the right purpose and the governors also act as the, articulating their ideas for uses of capital and making an accounting of the use of capital back to the principals (BG, 2004). Principals select and put in place the governors (board of directors, trustees) and

also select and put in place the auditors (external, independent body that tests and reports on the integrity of financial reporting and controls). The governors (intermediary entity or board) therefore have four core responsibilities, which comprise leadership, Stewardship, Monitoring and reporting.

According to the International Organization for Standardization (ISO), the Board plays a significant role in risk mask management framework the component of the ISO 31000 framework is mandate and commitment by the Board and this is followed by design of framework, implement risk management, monitor and review framework (Leitch, 2010).Agency theory has been used to analyze risk management by Hess &Impavido, 2003; Keasey, Short, & Wright 2005 who pointed out the trustees mix in terms of qualification and representation positively affects the implementation of risk policies. The trust form of pension Schemes in Kenya implies that the members of a scheme can be associated with the shareholders of a company and the controllers of an occupational pension fund, are the trustees. The sponsor also has control by exercising significant control over the pension trust by retaining powers to amend the trust deed and replace trustees; control is therefore jointly exercised by the trustees and the employer; taken together they can be compared to the management of a company (Nocker, 2000).

2.2.3 Portfolio theory

Markowitz (1952) is referred as the father of modern portfolio theory, which he formulated the as a choice of the mean and variance of a portfolio of assets arising from a mix of various assets leads to a reduction of risks and thus the more the number of investment options the easier it is to adopt risk management strategies. The fundamental theorem of mean variance portfolio theory is based on holding constant variance, maximizes expected return, and holding constant expected return minimizes variance. These two principles led to the formulation of an efficient frontier from which the investor could choose his or her preferred portfolio, depending on individual risk return preferences (Bodie, Markus and Kane 2009).

Markowitz's theory is referred as Modern Portfolio Theory, a theory of investment which attempts to maximize portfolio expected return for a given amount of portfolio risk, or equivalently minimize risk for a given level of expected return, by carefully choosing the proportions of various assets (Omisore, Yusuf, & Christopher, 2012). Most companies seek higher returns from asset mix that includes equities and thus

assume some risks, but through asset allocation across various investment classes the risks are minimized (Pozen, 2004). Pozen further argues that in defined benefits pension schemes portfolio arrangements by inexperienced trustees may hamper the success of pension schemes (Pozen, 2004). The portfolio model and minimization of risk has been mathematically modeled as

Total Risk = Diversifiable Risk + Market Risk (un-diversifiable risks).

In the 1970's portfolio theories were introduced in the field of strategic management and marketing and different portfolio models were developed as strategic tools to address the complex nature of enterprises which were cutting across nations with multiple products (Wind & Mahajan, 1981).Pension schemes should find a balance between continuously adapting their policy based on short term developments and sticking too long to their long term policy; considering risk component, Investment component, Governance component and monitoring component (Krammer, 2007). Strategic risk management model for pension schemes portfolio investments developed by Ortec finance limited links the risk components. Strategic

Risk management in a pension scheme set up whereby the objective was to offer a decent replacement income presupposes that investment decision makers should considers return on investment which should not only covers cover inflation but the level of risk exposure is minimized. The portfolio theory provides a good basis for evaluating the selection and allocation of assets so that it can minimize risks. Portfolio construction of the scheme assets can be successful only if the risk level of assets is considered.

2.2.4 Systems theory

A system has been described as a complex of interacting components together with the relationships among them that permit the identification of a boundary-maintaining entity or process (Krammer, 2007). Systems theory approaches a system as a whole while appreciating the mutual interdependency of the parts and thus fits to administration and management (Krammer, 2007). In regard to applications in studies of perception, systems theory can model complex intrapersonal, interpersonal, intergroup, and human/nature interactions without reducing perceptual phenomena to the level of individual stimuli (Weber, 2007).

Rosenzweing, Kast and Johnson (2008) notes that a business organization is a man-made system which has a dynamic interplay with its environment, customers, competitors, labor organizations, suppliers, government, and many other agencies. He argues that business organization is a system of interrelated parts working in conjunction with each other in order to accomplish a number of goals, both those of the organization and those of individual participants.

According to Schaefer (1998), Dunlop is credited as the pioneer of systems theory in application of social science based on the Dunlop's model of input output. Systems theory has been used in analysis of risk management by Stewart (2010) taking the governance perspective of pension schemes in OECD countries. Given the structure of pension schemes operations; having a regulator, trustees, and service providers, sponsor and members, this theory fits with the analysis of adoption of risk management strategies by the pension schemes.

2.3 Determinants of Performance

Pension schemes, like many other organizations, can be viewed as open systems which receive inputs, convert these inputs into outputs and deliver these outputs to stakeholders. Pension schemes receive inputs (scarce financial resources in the form of contributions and investment funds) and convert these inputs to outputs (pension fund value and retirement benefits) (Davis 2005) A pension fund would be regarded as performing well if it succeeds in maximizing financial outputs by the efficient use of the financial resources (inputs) (Chansarn 2005).

In the present study, pension funds are conceptualized as systems that transform financial inputs (asset values at the beginning of a financial year, contributions and payments for inputs) into gains or outputs (retirement benefits and asset values at the end of the financial year) for members. Performance is regarded as a function of internal management. A well performing pension scheme should operate at the lowest possible cost and maximize its returns on investments and benefits payable to the retirees.

2.3.1 Pension Schemes governance

Governance is defined in Carmichael and Palacios (2003:7) and IOPS (2007a:4) as the "systems and processes by which a company or government manages its affairs with the objective of maximizing the welfare of and resolving the conflict of interest amongst stakeholders." Pension fund governance is measured by the use of board composition and financial expertise of trustee's variables (Hsin and Mitchell 1997; Mitchell and Yang 2005).Effective pension fund governance involves the processes and decision-making structures that ensure appropriateness of goals, information management procedures that support the goals, compliance with pension regulations and the pension fund's stakeholders' collectivism (Stewart 2009:2; Ambatchsheer, Useem and Mitchell 2000:499). Although corporate governance has attracted much attention in the recent past, focus has not shifted to pension fund governance and credibility of the pension systems as important determinants of pension Schemes (Besley and Prat 2005; Carmichael and Palacious 2003; Ambatchsheer 2001). Plan management practices based on expense ratios (Mitchell and Yang 2005; Bikker and Dreu 2009), as well as decisions on whether funds outsource their services (Bikker and Dreu 2009).

Additionally, Mitchell and Yang (2005) show that governance variables of a pension fund may also include board (trustee) composition (proportion of active and retired trustees). Governance of a pension fund is also determined by the pension fund sponsor, be it a public enterprise, private enterprise or a financial institution for an individual retirement fund (Bikker and Dreu 2009).

Qureshi and McKay (2007:5) identify three broad approaches of viewing pension governance in the context of multi-national companies: (1) decentralised governance, which refers to where the pension fund governance is exercised in different pension Schemes in the same country; (2) compliant governance, which refers to following the law; and (3) efficient governance, which to refers to making financial and operational efficiency gains. Qureshi and McKay (2007) recommend the efficient governance option. Therefore, efficient governance should enable the pension fund to achieve compliance with the pension law and control of the decentralised units that eventually contribute to increased efficiency in operations

2.3.2   Pension Schemes regulations

According to IOPS (2007a:2) and the OECD (2002:3), pension fund regulation involves "the oversight of pension funds and the enforcement of and promotion of adherence to compliance with regulations relating to the structure and operation of pension funds with the goal of promoting a well-functioning pensions sector."

Pension fund laws prescribe the registration, administration and operations of pension funds. In terms of operational efficiency, pension fund regulations relate to the regulation of compliance costs, limitation of the number of trustees, fees charged by service providers, taxation of pension benefits, regulatory levies, regulatory meetings, risk based supervision and financial reporting.Hu, Stewart and Yermo (2007:6) identify two approaches to pension fund regulation as Quantitative Asset Restrictions (QAR) and the Prudent Person Rule (PPR). QAR involves legally limiting the percentage of assets that can be invested in a specific asset class by a pension fund. The PPR rule involves the legal expectations of the governing body in respect of obligations relating to the investment management function with the requisite level of skill and knowledge and to obtain external assistance where it lacks such expertise (Hu *et al.* 2007).

2.3.3 Pension Schemes investment strategy

Stanko (2002:3) defines "investment strategy" as the assortment of investments made by pension Schemes. The investment strategy determines the investment mix of the total funds of a pension fund that aims at having a careful balance between investment risk and returns (Stanko 2002; Eichholtz and Margaritova 2009:1). The investment strategy is therefore a plan that guides the choice of the investments that pension Schemes make.

According to OECD (2006), the investment strategy varies depending on the type of pension fund. Different authors (Asebedo and Grable 2004; Markese 2000; Stanko 2002) relate the investment strategy to the mix that an investor makes in the investment portfolio. Asebedo and Grable (2004) further identify two investment management styles: passive and active management and argue that passive investment management is more conservative than active investment management. A research gap has been identified, as the empirical literature does not relate the investment strategy to efficiency. The present study will investigate the appropriate investment strategy to maximize operational efficiency.

2.3.4 Pension Schemes Growth

Beasley et al (2005) states that as companies growth rate increases, the scope of events threatening it are likely to differ in nature, timing, and extent. Therefore the faster a company is growing, the more likely it will embrace ERM. However, Hoyt et al (2008) finds no significant relationship between the rate of growth of a company and its level of ERM implementation. Allayannis and Weston (2001), control for the effect of growth opportunities on Tobin's Q using the ratio of R&D expenditure to sales, or capital expenditure to assets. However, data related to R&D expenditure was not available for this study thus consequently the study used historical (one-year) sales growth as a proxy for future growth opportunities. This method was also used in Feng-Li Lin (2010) and Hoyt et al (2008).

2.4 Empirical Evidence

There have been various studies published about risk management in general. However, the number of the empirical studies on risk management practices in pension schemes

is relatively small. The following is an attempt to summarize the main conclusions of some selected studies.

2.4.1 International Evidence

Gordon, Loeb, and Tseng (2009) studied 112 US companies in 2005 to examine the impact of ERM on performance using linear regression. ERM was measured using ERM index created by the author and performance was measured using excess stock market return. The results showed a significant positive relation between ERM and firm performance. The study also revealed that this was contingent upon proper match between a firm's ERM system and five firm specific factors. Tahir and Razali (2011) examined the impact of ERM on shareholder value of 528 Malaysian firms in 2007 using linear regression model. ERM was measured using secondary data from Osiris database and shareholder value was measured using Tobin's Q. The study found a positive but insignificant relation between ERM and shareholder value.

Beasley, Pagach and Warr (2008) studied 120 US companies between 1992 and 2003 to examine market reaction to Chief Risk Officer (CRO) hire announcement. ERM was measured as CRO key words while performance was measured as cumulative abnormal returns after announcement. A linear regression analysis was used to analyse the data. The study found that generally, the market did not react to CRO announcement. However, there was a positive reaction from non-financial firms. Further, there was a positive effect of firm size and earnings volatility on shareholder 21 value and a negative effect of leverage and cash ratio on shareholder value. This was true only for non-financial firms.

Hoyt and Liebenberg (2008) examined the impact of ERM on shareholder value of 125 US insurers between 2000 and 2005 using a maximum likelihood model. ERM was measured using ERM and CRO key words as proxies while performance was measured using Tobin's Q. The study found a significant positive relation between firm value and ERM. The results showed that ERM improves shareholder value by approximately 17%.

Pagach and Warr (2010) examined 106 US companies in a bid to determine the impact of ERM on financial performance using log it and matched sample model. ERM was

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measured using CRO keywords as proxies and financial performance was measured using several financial variables. The results showed a significant decrease in stock price volatility after introducing ERM. Grace et al. (2013) examined the impact of ERM on performance of 523 US insurers between 2004 and 2006 using linear regression model. A survey was carried out where ERM was measured using ERM activity while performance was measured using cost and revenue efficiency using Data Envelopment Analysis (DEA). The study found a significant positive impact of ERM on cost and revenue efficiency depending on ERM activity.

2.4.2   Local Evidence

Kipchirchir (2008) examined the practices of motor vehicle firms towards foreign exchange risk management. The study was a survey of the motor vehicle industry in Kenya. The results revealed that the most commonly used foreign exchange risk management method was hedging.Kioko (2008) examined the credit risk management techniques used by commercial banks in Kenya to manage unsecured loans. The study was a survey of various commercial banks. The study revealed that the Banks used a combination of credit management methods for unsecured loans.

Njiru (2003) sought to examine how cooperatives manage their credit risks. The study was done among cooperatives in Embu District. The study was a survey of coffee co-operatives in the area. The results revealed that the methods of managing credit risk were similar to the ones commonly espoused in finance textbooks. Ngare (2008), credit risk management practices by commercial banks were sought. This was a survey of commercial banks in Kenya. The results revealed a combination of credit risk management methods used by commercial banks in Kenya.

Waweru and Kisaka (2013) examined the effect of ERM implementation on the value of 20 companies listed on the Nairobi Securities Exchange in 2011. A survey was carried out where ERM was measured using the level of implementation while firm value was measured using Tobin Q. The results showed that there was a positive relation between level of ERM implementation and firm value.

2.5 Research gaps

In the adoption of risk management practices, the findings in the reviewed literature as discussed in this study shows that causes the adoption of risk management practices in pension schemes remains blurred? Scant literature both theoretical and empirical on the causes of adoption of risk management practices is revealed from the literature. Globally risk management, being an integral part of strategic management, is a widely researched areas of financial management of business enterprise and corporate finance but gaps do exist in the following area; the risk management in the pension sector is largely ignored, no record show research that has been done in Kenya in the strategic context of exploring risk management adoption in the pension sector (Njuguna, 2010)

2.6 Summary of Literature Review

The study has reviewed expansive literature on pension schemes. It is clear that risk management practices have not been adopted fully to help mitigate losses of funds in the schemes. However the same measurements are still used to measure the performance of pension funds. It is also clear that most pension funds are still at their infancy and this makes it difficult to create any meaningful trend analysis on their performance. Studies linking performance of pension funds for most developing countries are also scarce since they do not have well-structured pension plans due to inadequate regulations.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section describes the methods applied in carrying out the study. It details the research design, target population, sampling technique, data analysis and presentation.

3.2 Research Design

The study adopted a descriptive research design since the study intended to gather quantitative data that described the effect of risk management practices on performance of pension Schemes in Kenya. Mugenda and Mugenda (1999) argued that descriptive research design method is appropriate for studies that have specific issues where the problem has been clearly defined. It determines and reports the way things are or answers questions concerning the subjects in the study. Kothari (2004) describes descriptive research as including surveys and fact- finding enquiries adding that the major purpose of descriptive research is description of the state of affairs as it exists at present. The study considered this design since it facilitated towards gathering of reliable data describing the effect of risk management practices on performance of pension Schemes in Kenya.

3.3 Population

The total population was the entire spectrum of a system or process of interest. It is the Universe of people to which the study can be generalized (Johnston and VanderStoep, 2009). According to the Retirement Benefits Authority (RBA) (2014) there are one thousand three hundred and eight (1,308).

3.4 Sample

The entire population was divided into stratus based on the two designs of pension schemes (Defined Benefits pension schemes and Defined Contribution pension schemes). From the stratum 80 Pension schemes were selected randomly to ensure that each of the schemes has an equal chance of being selected. The pension scheme selected had to be a segregated Pension scheme which have been inexistence for the last 5 years and had used the same fund manager over the period of study.

3.5 Data Collection

The study used both primary and secondary data. The purpose of using primary source data was to get respondents' perception towards the risk management practices followed by the Pension schemes in Kenya. The primary data for the study was collected using personally administered questionnaires. See Appendix I. The questionnaire was adapted from Khan and Ahmed (2001) and Ariffin et al. (2009). The questionnaire consisted of six sections. The first section gathered the institutional information, the second section provided information about the risk management environment. The other sections provided information about risk measurement followed by risk monitoring, risk mitigation and internal control techniques adopted by the pension schemes. The questionnaire was designed to consist of 5 likert scale point, 5 for strongly agree, 4 for agree, 3 for no opinion, 2 for disagree and 1 for strongly disagree.

The secondary data was quantitative in nature and was collected from the annual financial statements of the pension schemes. These Financial Statements usually in copies resided with the Fund Managers, Scheme Trustees, Scheme Administrators and RBA as filed returns. Financial statements were sourced from the RBA systems and the pension funds for validity. For the data to be representative enough, the study reviewed Secondary data for any five years depending on data availability and access.

3.6 Data Analysis

The study generated both quantitative and qualitative data. Descriptive statistics data analysis method was applied to analyze numerical data gathered using closed ended questions. The Statistical Package for Social Sciences (SPSS) computer software was used for analysis to generate data array that was then used for subsequent analysis of the data. SPSS Version 21 was used, which had descriptive statistics features that assist in variable response comparison and gives clear indication of responses frequencies. The data was cleaned, coded, categorized per each of the research variables and then analyzed using descriptive analysis such as percentages.

The researcher also conducted inferential analysis which included multiple regression analysis.

The regression equation was

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where;

Y = Performance of Pension Schemes and this was measured using Sharpe Ratio, developed by William F. Sharpe, measures how much excess performance was achieved per unit of risk for a specified period.

Sharpe ratio = (Mean portfolio return − Risk-free rate)/Standard deviation of portfolio return

α = constant/the interception point of the regression line and the y-axis

X_1= Risk Management Environment.

X_2=Risk Measurement.

X_3=Risk Mitigation.

X_4=Risk Monitoring.

X_5= Internal Control.

ε = disturbance term or error term

While β_1, β_2, β_3, β_4 and β_5 are the Coefficients of determination,

The significance of each of the coefficient was tested at 95 percent level of confidence to explain the variable that explained most of the problem. The five variables were measured by coding and analyzing the opinions given by the respondents being employees of Pension Schemes in Kenya in SPSS.

Table 1: Operationalization of the Study Variables Variable

	Measurement
Risk Management Environment.	To come up with the assessment of Risk Management Environment the quantification points will be assigned (using likert scale) for the different questions in the section and adding them up to get the total numerical score of 100%.The resulting index gives an indication of the overall status of risk management in the Pension Schemes.
Risk Measurement	The assessments of Risk Measurement points will be assigned (using likert scale) for the different questions in the section and adding them up to get the total numerical score of 100%. The resulting index gives an indication of the overall status of risk management in the Pension Schemes.
Risk Mitigation	The assessment of Risk Mitigation the quantification points will be assigned (using likert scale) for the different questions in the section and adding them up to get the total numerical score of 100%. The resulting index gives an indication of the overall status of risk management in the Pension Schemes.
Risk Monitoring	The assessment of Risk Monitoring the quantification points will be assigned (using likert scale) for the different questions in the section and adding them up to get the total numerical score of 100%. The resulting index gives an indication of the overall status of risk management in the Pension Schemes.
Internal Control	The assessment of Internal Control the quantification points will be assigned (using likert scale) for the different questions in the section and adding them up to get the total numerical score of 100%. The resulting index gives an indication of the overall status of risk management in the Pension Schemes.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

In this chapter the findings of the data analysis are presented. The data was sampled, collected and analyzed in response to risk management practices and performance from the respective Pension Schemes. A sample of 80 pension schemes that had invested in segregated funds had consistently used one fund manager (Alexander Forbes Financial Services) over the period of the study and had been in existence for the last 5 years as at the end of 2013 was used. The findings were then presented in tables and appropriate explanations were given in prose. The results of performance for the Pension Schemes were presented in a table and a brief explanation was given. To measure the effects of risk management practices on the performance, regression analysis was carried out as well as correlation analysis.

4.2 Response Rate

Of the total 80 Pension schemes targeted, 64 Pension schemes responded to the questionnaires, representing a response rate of 80% which is within Mugenda and Mugenda's (2003) prescribed significant response rate for statistical analysis which they established at a minimal value of 50%.

4.3 Institutional background information

The study sought to establish the institutional background information of the respondents including respondents' position in the organization, the type of pension scheme and the type of financial risk the scheme was exposed to.

4.3.1 Respondent Position in the Organization

The study sought to find out the respondent's position in the organization which are captured in table 4.1.From the findings, majority of the respondents interviewed (50%) were Finance Managers who are key to Pension Schemes, 25% were chief Finance Officers, 17.2% were Credit analyst and 7.8% were others. The position of the respondent was of importance since it verified that the respondents could provide relevant information that would be of importance to study and was representative enough of the target population for generalization purpose.

Table 4.1: Position of the Respondents

Position	Frequency	Percentage
Finance Managers	32	50%
Chief Finance Officers	16	25%
Credit analyst	11	17.2%
Others	5	7.8%
Total	**64**	**100%**

4.3.2 Type of Pension scheme

The study sought to find out the type of pension scheme which are captured in figure 4.1.From figure 4.1 it is evident that most of the respondents were from defined contribution pension scheme at 60% while the remaining 40% were from defined benefit pension scheme.
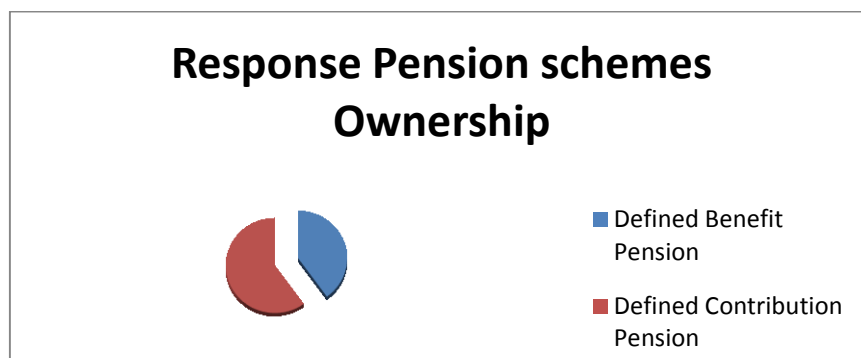
Figure 4.1: Response-Pension schemes Ownership

4.3.3 Type of Financial Risk

The study sought to find out the type of financial risk the pension schemes were exposed to as captured in table 4.2.From the findings, majority of the respondents interviewed (37.5%) indicated liquidity risk, 29.16% interest rate risk, 16.67% foreign exchange risk, 12.5% market risk and 4.17% indicated credit risk. The type of financial risk the pension schemes was exposed was of importance since it verified that the respondents have an understanding of risk environment and hence would provide relevant information for this research.

Table 4.2: Type of Financial Risk

Financial Risk	Frequency	Percent
Market (price) Risk	8	12.5
Liquidity Risk	24	37.5
Credit Risk	3	4.69
Foreign Exchange Risk	11	17.19
Interest rate Risk	18	28.12
Others (specify)	0	0
Total	**64**	**100**

4.4 Performance of Pension Schemes

The study sought to analyze the performance of pension schemes using the Sharpe Ratio of the 64 pension schemes. To measure performance the study sought to understand the overall industry investment portfolio so as to appreciate the importance of risk analysis based on the value schemes hold, which is shown in table 4.3.

Table 4.3: Overall Industry Investment Portfolio

	December 2009		December 2010		December 2011		December 2012		December 2013	
	Kshs Bn	%	Kshs Bn	%	Kshs Bn	%	Kshs Bn	%	Kshs Bn	%
Government Securities	141.2	31%	143.6	32%	145.7	34%	176.3	35%	190.3	35%
Quoted Equities	120.5	29%	130.4	29%	93.0	21%	114.7	23%	130.4	24%
Immovable Property	80.0	18%	80.0	18%	87.8	20%	97.9	20%	101.6	19%
Guaranteed Funds	33.3	7%	33.3	7%	48.0	11%	41.3	8%	48.1	9%
Fixed Income	21.1	5%	21.1	5%	20.7	5%	20.8	4%	26.7	5%
Fixed Deposit	10.2	4%	17.2	4%	21.9	5%	26.4	5%	27.1	5%
Offshore	12.4	2%	15.3	3%	5.2	1%	6.4	1%	8.5	2%
Cash	5.2	2%	7.3	2%	6.8	2%	9.8	2%	12.9	2%
Unquoted Equities	1.8	2%	2.5	2%	3.7	1%	3.9	1%	3.1	1%
TOTAL	**425.7**	**100%**	**450.7**	**100%**	**432.8**	**100%**	**497.5**	**100%**	**548.8**	**100%**

Source: RBA 2014

4.4.1 Fixed Income Asset Allocation Analysis

The study sought to analyze the mean, maximum and minimum returns and as well the variance, standard deviation and Sharpe Ratio of the 64 pension scheme returns; fixed income allocation with the asset allocation of 58.22% as indicated in table 4.4. Fixed

income asset class has a low variance of 0.08% and medium standard deviation of 11.67% implying that the fixed income asset class returns are not far from the mean and each other hence less risky.

Table 4.4: Fixed Income Asset Allocation Analysis for period 2009 - 2013

Measure	Fixed Income Asset Class
Median return	0.98%
Mean return	1.02%
Maximum return	8.93%
Minimum return	-7.18%
Variance	0.08%
Standard Deviation	11.67%
Asset Allocation	58.22%
Sharpe Ratio	16.40%
Observations	64

4.4.2 Equities Asset Allocation Analysis

The study sought to analyze the mean, maximum and minimum returns and as well the variance, standard deviation and Sharpe Ratio of the 64 pension scheme returns; equities allocation with the asset allocation of 46.82%. Equities asset class has the highest variance of 0.58% and medium standard deviation of 20.49% implying that the equities asset class returns are far from the mean and each other hence the most risky asset class. This can also be explained by the oscillations in the NSE 20 Share Index as per table 4.5.

Table 4.5: Equities Asset Allocation Analysis for period 2009 - 2013

Measure	Equities Asset Class
Median return	2.55%
Mean return	1.64%
Maximum return	16.90%
Minimum return	-21.29%
Variance	0.49%
Standard Deviation	20.49%
Asset Allocation	46.82%
Sharpe Ratio	7.60%
Observations	64

4.4.3   Offshore Asset Allocation Analysis

The study sought to analyze the mean, maximum and minimum returns and as well the variance, standard deviation and Sharpe Ratio of the 64 pension scheme returns; equities allocation with the asset allocation of 17.72%. Offshore asset class has a medium variance of 0.12% and medium standard deviation of 15.79% implying that the offshore asset class returns are not deviating much from the mean and each other therefore has a medium risk as per table 4.6.

Table 4.6: Offshore Asset Allocation Analysis for period 2009 - 2013

Measure	Offshore Asset Class
Median return	1.42%
Mean return	1.39%
Maximum return	8.80%
Minimum return	-6.46%
Variance	0.12%
Standard Deviation	15.89%
Asset Allocation	17.72%
Sharpe Ratio	12.20%
Observations	64

4.4.4 Summary Returns and Asset Class Allocation

This section presents a summary of portfolio performance analysis of pension funds that consists in estimating Sharpe ratios against several alternative specifications of low risk reference assets and in applying Sharpe's (1992) attribution methodology (Walker and Iglesias, 2007). Sharpe ratio was adopted in order to address the question on whether the different pension systems have beaten their own benchmarks or low risk references. Secondly, Sharpe ratios using four alternative specifications for the risk free asset: a short-term local rate, a long-term local rate, a short term US rate (T-bill), and a long-term US rate (T-bonds). Thirdly, the report calculates another performance measure using Sharpe's empirical attribution analysis (Shape, 1992).

Table 4.7: Summary Returns and Asset Class Allocation for period 2009 - 2013

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.39%	0.98%	2.55%	1.42%
Mean return	**1.28%**	**1.02%**	**1.64%**	**1.39%**
Maximum return	7.28%	8.93%	16.90%	8.80%
Minimum return	-5.84%	-7.18%	-21.29%	-6.46%
Variance	0.06%	0.08%	0.38%	0.12%
Standard Deviation	8.73%	9.67%	21.45%	11.89%
Asset Allocation	**100.00%**	**53.32%**	**35.89%**	**10.79%**
Sharpe Ratio	7.0%	16.40%	7.60%	12.2%

4.5 Risk Management Practices of Pension schemes in Kenya

To assess the level of risk management practices of Pension schemes in Kenya by using the descriptive tests, the study used the 5-Likert scale approach in the questionnaire. The higher the scale indicated that the respondent strongly agreed to such practices adopted by their Pension schemes. Risk management practices were covered in five parts: Risk Management Environment, Risk Measurement Practices, Risk Mitigation

Practices, Risk Monitoring Practices and Internal Control Practices as suggested by the RBA (2014).

4.5.1 Risk Management Environment

The study sought to evaluate Risk Management Environment in pension schemes the results as in Table 4.8 show that all the respondents agree with almost all item statements. Majority of the respondents (with a mean of over 4.5) strongly agreed with seven items, namely item: There is a formal system of Risk Management in the pension scheme; item: The Board of directors outline the overall risk objectives; item: There is a section/department responsible for identifying, monitoring, and controlling various risks; item: The pension scheme have internal guidelines/rules and concrete procedures with respect to the risk management system; item: The pension scheme has the policy of diversifying investment across different sectors; item: Your pension scheme has adopted and utilized Revised CBK Financial Risk management Guidelines; and item: Your pension scheme has adopted and utilized Revised CBK Prudential Guidelines.

Table 4.8: The influence of Risk management environment on performance

Statements	Mean	Standard Deviation
There is a formal system of Risk Management in the pension scheme.	4.29	0.67
The Board of directors outlines the overall risk objectives.	4.61	0.51
There is a section/department responsible for identifying, monitoring, and controlling various risks.	4.49	0.84
The pension scheme has internal guidelines/rules and concrete procedures with respect to the risk management system.	4.08	0.93
The pension scheme has the policy of diversifying investment across different sectors.	3.47	0.86

Your pension scheme complies with pension regulation framework.	3.65	0.62
Your pension scheme has adopted and utilized Revised CBK Financial Risk management Guidelines	4.83	0.66
Your Bank has adopted and utilized Revised CBK Prudential Guidelines	4.29	0.67
There is a budgetary allocation to the risk management function.	4.61	0.72

4.5.2 Risk Measurement

The study sought to establish the existence of risk measurement practices in pension schemes in Kenya, as shown in Table 4.9, only three items statement scored a mean of 4 that is the respondents agreed on the items statement. The item statements were; the pension schemes regularly conducts simulation analysis and measure benchmark (interest) rate risk sensitivity; the pension schemes uses Maturity Matching Analysis and item statement; pension scheme uses Estimates of Worst Case scenarios/stress testing for risk analysis. This is an indication that the risk measurements techniques are still developing in Kenyan Pension Schemes.

Value at Risk analysis , Risk Adjusted Rate of Return on Capital (RAROC) were not common measurements of risk in the Kenyan Pension Schemes as they scored a mean of 2 which showed that majority of the respondents were not aware of the techniques. Majority of the pension schemes also confirmed that there were no internal risk rating systems as well as computerized support system for estimating the variability of earnings and risk management. These areas may need improvement in order to assist the bank in managing the risks efficiently.

Table 4.9: The influence of Risk Measurement on performance

Statements	Mean	Standard Deviation
There is a computerized support system for estimating the variability of earnings and risk management.	4.29	0.67

The pension scheme regularly conducts simulation analysis and measure benchmark (interest) rate risk sensitivity.	4.61	0.72
The pension schemes uses Gap Analysis	4.49	0.68
The pension scheme uses Duration Analysis	4.68	0.67
The pension scheme uses Maturity Matching Analysis	4.83	0.66
The pension scheme uses Value at Risk analysis	3.47	0.86
The pension scheme uses Estimates of Worst Case scenarios/stress testing for risk analysis.	3.65	0.62
The pension scheme use Risk Adjusted Rate of Return on Capital (RAROC)	4.83	0.66
The pension schemes use has other Internal Risk Rating System	3.46	0.84

4.5.3 Risk Mitigation

Table 4.10 presents the perception on risk mitigation practices in Kenyan pension schemes. For risk mitigation practices, majority of item statements scored a mean 3.5-4.3 which are considered good. However, item; "there are derivatives instruments to mitigate financial risk" scored a mean of 1.4 meaning majority of the respondents did not agree that Kenyan pension schemes use derivative instruments to mitigate financial risk. This area may need improvement in order to assist the pension schemes in managing the risks efficiently.

Table 4.10: The influence of Risk mitigation on performance

Statements	Mean	Standard Deviation
There are Derivatives instruments to mitigate financial risk.	3.29	1.07
The credit limits for individual counterparty are set by a committee.	4.49	0.98

There are mark-up rates on assets set taking account of the risk factors or asset grading.	4.08	0.67
The pension scheme regularly (weekly) compiles a maturity ladder chart according to settlement date and monitor cash position gaps.	2.37	0.98
The pension scheme regularly conducts simulation analysis and measure benchmark (interest) rate risk sensitivity.	4.13	0.87
The pension scheme has a quantitative support system for assessing customers' credit standing	4.26	0.53
There is credit rating of prospective investors.	2.38	0.93

4.5.4 Risk Monitoring

Table 4.11 on the frequency of generating risk reports indicate that majority of the pension schemes generates monthly risk reports. This can as well be classified as good risk management technique.

Table 4.11: The influence of Risk Monitoring on performance

Statements	Mean	Standard Deviation
The pension scheme periodically reappraises collateral (asset).	4.79	0.67
The pension scheme confirms a guarantor's intention to guarantee loans with a signed document.	4.61	0.51
For international loans, the pension schemes regularly reviews country ratings	4.50	0.82
Credit risk report	4.08	0.93
Market risk report	3.99	0.87
Interest rate risk report	3.87	0.86
Liquidity risk report	4.08	0.93
Foreign exchange risk report	2.37	0.98
Capital at Risk	4.13	0.87

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4.5.5 Internal Control.

As per Table 4.8, for internal control practices, the respondents strongly agreed in all items. This can be considered as good practice.

Table 4.12: The influence of Internal controls on performance

Statements	Mean	Standard Deviation
The pension schemes have put in place an internal control system capable of swiftly dealing with newly recognized risks arising from changes in environment.	4.29	0.67
There is a separation of duties between those who generate risks and those who manage and control risks.	4.61	0.51
The pension scheme have countermeasures (contingency plans) against disasters and accidents.	4.49	0.84
The Internal Auditor verifies the authenticity of accounts and risk reports prepared.	4.08	0.93
The pension scheme has backups of software and data files.	4.47	0.86
There is a Risk Committee in the Board Level.	4.65	0.62

4.6 Relationship between dependent and independent variable

The significance of each independent variable was tested at a confidence level of 95%. Significance of risk management practices variables as predictors of performance of pension schemes was tested using the chi-square test. A correlation analysis was also performed to find how the variables relate to each other in the model.

4.6.1 Regression Analysis

In this study, a multiple regression analysis was conducted to establish the effect of risk management practices on performance of pension Schemes in Kenya. The research used statistical package for social sciences (SPSS V 21.0) to code, enter and compute the measurements of the multiple regressions

Table 4.13: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.903	0.815	0.616	0.97120

R-Squared is a commonly used statistic to evaluate model fit. R-square is 1 minus the ratio of residual variability. The adjusted R2, also called the coefficient of multiple determinations, is the percent of the variance in the dependent explained uniquely or jointly by the independent variables. 61.6% of the variations in performance of pension schemes are explained by influence of risk management environment, risk measurement, risk mitigation, risk monitoring and internal controls contribution leaving 38.4% percent unexplained. Therefore, further studies should be done to establish the other factors (38.4%) influencing performance of pension schemes in Kenya.

Table 4.14: Summary of One-Way ANOVA (Analysis of Variance)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.62	4.000	1.655	4.720	0.002
	Residual	32.61	191.000	0.351		
	Total	39.230	195.000			

From the ANOVA table 4.14, the regression model predicting the relationship between the dependent and independent variables is significant at F= 4.720 and P = 0.002. The results presented gives the ANOVA results which show the reliability of the model developed in explaining the relationship between the study variables. This therefore reveals that the regression model developed is statistically significance and the variation in the results is insignificant that cannot result to a much difference in case of

a change in the study units (population) and therefore the model can be relied upon to explain the effect of risk management practices on performance of pension schemes in Kenya.

Table 4.15: Coefficients of Regression Equation

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.193	0.432		2.762	0.015
Risk Management Environment	0.806	0.108	0.146	7.463	0.013
Risk Measurement	0.648	0.141	0.126	3.887	0.029
Risk Mitigation	0.413	0.125	0.145	4.904	0.022
Risk Monitoring	0.716	0.124	0.112	2.556	0.037
Internal Controls	0.826	0.138	0.116	8.162	0.011

These coefficients therefore are used to answer the following regression model which relates the predictor variables (independent variables) and the dependent variables;

$$Y = 1.193 + 0.806X_1 + 0.648 X_2 + 0.413X_3 + 0.716X_4 + 0.826X_5 + \varepsilon$$

Where Y = Performance (Measured by Sharpe Ratio) which is the dependent variable:

α = Constant which defines long term Performance value without inclusion of independent variables

X_1 = Risk management environment,

X_2 = Risk measurement,

X_3 = Risk mitigation,

X_4 = Risk monitoring,

X_5 = Internal control and

ε = Error Term Based on these coefficients, the regression model therefore becomes;

The regression test results presented in the table 4.14 indicate that, all the coefficients are positive and are also significant as given by their p-values (sig. values) which are all less than 0.025 testing at 5% level with a 2-tailed test. Thus, with these values being less than the critical value at 5% level, the coefficients are statistically significant and explain significant influence of the independent variables to the performance of pension schemes.

Thus, the model indicates that, holding the predictor variables constant, the Performance of pension schemes would be 1.193. This explains that, without the influence of the risk management environment, risk measurement, risk mitigation, risk monitoring and internal controls, the Performance of pension schemes using Shape Ratio would be 1.193. Also, the model shows that, a unit increase in risk management environment activities would result to 0.806 times increase in the pension schemes performance. Thus the two variables are positively related with a magnitude of 0.806 explaining the extent of influence to the dependent variable.

From the model developed also, it is clear that a unit change (increase/ decrease) in the risk measurement activities will lead to a 0.648 times direct changes in the pension schemes Performance. This indicates that, risk measurement activities and the Performance of the pension schemes are positively related where increasing the risk measurement activities will give a corresponding increase of 0. 648 times to the Performance and vice versa.

Further, the model indicates that, the coefficient of risk mitigation activities and the Performance of the pension schemes is 0.413. This reveals that, given a unit increase in risk mitigation activities, the Performance of pension schemes will be affected by 0.413 times increase consequently. Thus, the two variables are positively related and a unit

change in risk mitigation will result to 0.413 times changes in the same direction to the Performance of pension schemes.

From the model developed also, it is clear that a unit change (increase/ decrease) in the risk monitoring activities will lead to a 0.716 times direct changes in the pension schemes Performance. This indicates that, risk monitoring activities and the Performance of the pension schemes are positively related where increasing the risk monitoring activities will give a corresponding increase of 0.716 times to the Performance and vice versa.

Further, the model indicates that, the coefficient of internal control measures and the performance of the pension schemes is 0.826. This reveals that, given a unit increase in internal control measures, the performance of pension schemes will be affected by 0.826 times increase consequently. Thus, the two variables are positively related and a unit change in risk mitigation will result to 0.826 times changes in the same direction to the performance of pension schemes.

All the variables were significant as their P-values were less than 0.05. In terms of magnitude, the findings indicated that internal control had the highest influence on performance of pension schemes measured using Sharpe ratio, followed by risk management environment, followed by risk monitoring, followed by risk measurement while risk mitigation had the least influence on performance of pension schemes measured using Sharpe ratio.

4.7 Discussion of the findings

The study established that there was a significant relationship between the financial risk management practices on the performance of pension schemes. In general, table 4.14 shows the result of correlations analysis between performance of pension schemes (using Sharpe ratio) and all risk management practices showed an existence of strong positive correlation. A strong positive correlation between performance of pension schemes and risk management environment (0.806) existed. A positive correlation relationship (0.648) exists between performance of pension schemes and risk measurement practices. Moreover, there moderate correlations between performance of pension schemes and risk mitigation practices and risk monitoring practices (0.413 and 0.716 respectively). Internal control practices had the strongest correlation with performance of pension schemes (0.826). Based on these correlations, it can be concluded that the higher the performance of pension schemes, the better will be the internal controls, risk and also risk measurement practices in the pension schemes.

The R-Square in table 4.13 indicates that 61.6% of the performance of pension schemes (using Sharpe ratio) is explained by the financial risk management practices. The adjusted R-Square of 0.815 also confirms the same. This means that there is a strong effect between the financial performance (Sharpe ratio) and the financial risk management practice. Table 4.13 shows that financial risk management efficiency significantly affects the financial performance of pension schemes in Kenya.

The Sharpe (1966) ratio (SR) remains at the core of modern portfolio theory. If every investor combines a single riskless asset (supposedly well defined) with the portfolio whose performance is being evaluated, and assuming that the relevant risk measure is the same for all investors (volatility), then the unique measure of performance that should be used to rank alternative investment opportunities is the SR. For the SR to

provide a meaningful ranking, every investor should view risk in the same way. This requires that the following assumptions, among others, hold: (1) there are no short-sale restrictions for the risk-free asset, (2) all investors have the same planning horizon, (3) there are no other sources of wealth, and (4) consumption goods prices are uncorrelated with asset returns. Under these assumptions investors should choose the portfolio with the highest SR.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introductions

The purpose of this chapter was to discuss and draw conclusions and recommendations on the findings of the main objective of the study which was to examine the effects of risk management practices on performance of Pension Schemes in Kenya. The chapter will also discuss further areas of study.

5.2 Summary of the Findings

The study examined the effect of risk management practices on performance of pension schemes in Kenya. The descriptive results showed that the shape ratio was 7% for total fund. The results show that all the risk management practices had a higher mean value which suggests that these practices were practiced highly by the fund management firms surveyed. The mean of the pension schemes was 1.28%, and the standard deviation of 8.73%. The regression results revealed that the model accounted for 61.6% of the variance in performance as shown by the adjusted R value. The *F*-statistic of 4.720 was significant at 5% level, suggesting that the model was fit to explain the relationship between risk management practices and performance. The coefficient results showed that risk management environment, risk measurement, risk mitigation and Internal Controls had positive effects on the performance of pension schemes in Kenya.

5.3 Conclusions of the Study

The study established that financial risk management had a strong impact on the performance of pension schemes in Kenya. The study also established that the internal controls had the biggest impact on financial performance followed by risk mitigation practice. Thus, as each shilling invested in risk measurement techniques and risk

mitigation techniques increases revenues generation and the performance of pension schemes increases. Also the study concludes that privately managed pension funds have obtained a positive premium given the level risk when comparing at least with the short-term alternative investment instrument.

5.4 Recommendations of the Study

The study makes a number of recommendations. First, the study recommends that the pension fund management firms in Kenya should employ robust risk management practices as these are likely to influence their performance in one way or another. Secondly, the study recommends that in order for pension schemes to improve on their performance, they should focus more on improving how they assess their internal environment and work on control activities as these are likely to enhance performance of these firms. Lastly, the study recommends that the Retirement Benefits Authority should, on frequent basis, evaluate the risk management practices put in place by the pension schemes in Kenya and reward those with excellent practices. This will encourage more firms to institute ERM practices as well as create more awareness on the need for the same in all organizations.

5.5 Limitations of the Study

The data covers a few years, precisely only 5 years. The findings may not be applicable across all times in Kenya. The results given by this study are therefore limited to the 5 years that were studied. The findings may, therefore, not apply across all years since as evidenced by the data itself variations in the relationship may vary from time to time dependent upon the policies concerning how pension funds are utilized in Kenya.

The study does not provide a universal argument concerning the relationship between pension schemes performance and the independent variables. Within the increasingly globalized world economy of the world, there is need to provide argument that stand

the test of global argument. In universal arguments the findings are usually applicable in different geographical contexts and different time contexts. The findings of this study are applicable, mainly in Kenya and for the covered period. A study can be done to find out how to generate universal arguments.

The study did not investigate the effect of governance on financial performance of the pension plans, it focused only on the risk management practices. Future research agenda should investigate the effect that the pension plan governance and leadership have on financial performance of the pension plans.

5.6 Suggestions for further Research

The study recommends that a similar study should also be done in other areas like insurance and banking to establish whether it will yield the same results. Further comparative studies should be done on the risk management practices and governance of pension schemes in Kenya. From the findings only 61.6% of factors influencing performance of pension schemes hence further studies should be carried out to establish the remaining 38.4%.

REFERENCES

Ambachtsheer, K. R., Capelle, G. M., &Lum, H. (2007).The state of global pension fund governance today: Board competency still a problem. Pensions Management Institute Journal, 76(3), 501 -503.

Ambrogio, I. R., &Elisabetta, G. (2010). IOPS Information for Members of DC Pension Plans: Conceptual Framework and International Trends. Retrieved on 15th September 2012 from http:/www.iopsweb.org

Ariffin N. M. & Kassim S.H (2011).Risk Management Practices and Financial Performance of Islamic Banks: Malaysians Evidence. *Islamic Economics & Finance Pedia*

Ariffin, N.M, Archer, S., & Karim, R. A., (2009). Risks in Islamic banks: Evidence from empirical research. *Journal of Banking Regulation, 10(2), 153–163.*

Armstong, S.L. (2010). The subjectivity problem: Improving triangulation approaches in metaphor analysis. International Journal of Qualitative Methods. 10(2), 152.

Asher, A. (2007). The design of retirement schemes: Possibilities and imperatives. Unpublished Doctoral dissertation, University of the Witwatersrand, South Africa.

Association of Insurance and Risk Managers (2010). Risk analysis framework annual report 2010. Hamilton, New Zealand: University of Waikato, Department of Management.

Atuntas, M., Berry-Stölzle, T. R., & Hoyt, R. E. (2011). Dynamic determinants of enterprise risk management adoption in the property-liability insurance industry: evidence from Germany. Journal of risk management, 123 (17), 1234 -1244.

Australian Prudential Pension Regulation Authority. (2011). Half yearly financial bulletin report on pensions and life insurance (Information series, No. 15). Sydney, Australia.

Beasley, M., Clune, R., &Hermanson, D. (2008). Enterprise risk management: An empirical analysis of factors associated with the extent of implementation. Journal of Accounting and Public Policy, 24(3), 521-531.

Bergmann B. (2012). Determinants of board size and composition. An Empirical study of Danish medium and large firms. Journal of Business and Finance, 206(3), 234-271.

Besson, P. (2010). Network and information theory for audiovisual perception modeling. Journal of Systems Information Management, 103(3), 213-226.

Bhagat, S. & Black, B. S. (2008). Independent Directors. The new Palgrave dictionary of economics and the law, Peter Newman, 2(3), pp. 283-287. Available at SSRN: http://ssrn.com/abstract=1139191

Bhojraj, S., &Sengupta, P. (2010). Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors. Journal of Business Management. 76(3), 123-141.

Blake, D. (2003). Pension Schemes and Pension Funds in the United Kingdom. New York: Oxford University press.

Blinder, A. S. (1983). Private Pensions and Public Pensions: Theory and fact. Ann Arbor, MI, University of Michigan Press.

Blumberg, R., Cooper, D. R. & Schindler, P. S. (2011). Business Research Methods (11th ed.). Irwin: McGraw-Hill

Brown Governance (2004). Brown governance report: Agency theory and governance report. Retrieved on 22nd October 2012 from http://www.browngovernance.com/resources/AgencyGovernanceExplained.htmld

Bryman, A. & Bell, E. (2003). Business Research Methods. New York: Oxford University Press

Bull, R. (2009). The theory of entrepreneurship. Journal of business venturing, 8(3), 234-276.

Burns & Stalker (1961). Contingency theory: Management of innovation. Retrieved from www.sagepub.com/upm-data/27412_8.pdf

Canada's Dey Report. (1994). Where were the Directors? Corporate Governance guidelines. Toronto Stock Exchange. Toronto: ICTS, press.

Canadian Pensions Supervisory Authorities. (2012). Risks management and pensions. Retrieved from www.capsa-acor.org/en/pubs/pdf.

Cardbury Report. (1992). The financial aspects of corporate governance. Retrieved from www.icaew.com/en/library/subject/codesreports/cadbury-report

Cooper, D. & Schindler, P. (1995). Business research methods (3rd ed.). London: Irwin's

Cooper, D. R., & Schindler, P.S. (2008). Business Research Methods (10thed.). Irwin: McGraw-Hill

COSO (2004). Enterprise Risk Management — Integrated Framework. Retrieved from - www.coso.org/documents/coso_erm_executivesummary.

Cox, B. K (2010). Public Research Institutes in Europe: changing environments and strategic responses. London: Ivy, press.

Creswel, J.W. (2008). Qualitative inquiry and research design. California: Sage

Crispin, P., &Dauglas, P. (2008). Portfolio theory and Management. Irwin: McGraw-Hill

Cummins, J. D., &Nini, G., P. (2002). Optimal Capital Utilization by Financial Firms: Evidence from the Property-Liability Insurance Industry. Journal of Financial Services Research, 21: 15–53.

Cummins, J. D., Lin, Y., & Phillips R. D. (2008b.). Capital Allocation and the Pricing of Financially Intermediated Risks: An Empirical Investigation. Working Paper. Temple University, Philadelphia, University of Nebraska, Lincoln, and Georgia State University, Atlanta.

Eisenhardt, M. K., (2009). Agency theory: An assessment and review. London: Sage.

Elango, B., May. M & Pope N. (2008). An investigation the diversification performance relationship in the U.S. Property-Liability Insurance Industry. Risk and Insurance Journal, 75(3), 567–591.

Ethical Investment Research Services (2005). Ethical Investment Research Services in UK. Retrieved from http://www.companiesintheuk.co.uk/ltd/ethical-investment-research-services-%28eiris%29

Fabozzi, F. J., & Peterson, P. P. (2003). Financial management and analysis. New York, John Wiley & Sons Inc.

Fassin T. (2008). Risk management in pensions: Challenges and options. London: Irwin press.

Fich, E. M. &Shivdasani, A. (2006). Are Busy Boards Effective Monitors? Journal of Finance Apr. Vol. 61 (2), 689.

Fisher T. M. (1995). Contingency theory: Application to risk management. New York. McGraw Hill.

Fite, D. &Pfleiderer, P. (1995). Should firms use derivatives to manage risks? Risk Management: Problems and solutions, New York: McGraw Hill

Kemp, H. D. & Patel, C. C. (2011). Entity-wide risk management for pension funds: Making sense of the future. Edinburgh: Kurlie, press.

Kennedy, M. M. (2007). Defining a literature. Educational Researcher Journal 36 (3), 139-147. doi: 10.3102/0013189X07299197

Kenya Retirement Benefits Authority (2010). Pensions annual Financial Report 2010. Nairobi, Kenya.

Kenya Retirement Benefits Authority (2011). Pensions annual Financial Report 2011. Nairobi, Kenya.

Kenya Retirement Benefits Authority (2012). Pensions annual Financial Report 2012. Nairobi, Kenya.

Kerlinger, F. H., & Lee H. B. (2000). Foundations of behavioural research. (4thed). Holt, NY: Harcourt College Publishers,

Key, S. (1999). Towards a new theory of the firm: A critique of the stakeholder's theory. Journal of Business Management, 37 (4): 317 -328

Khan, T., and Ahmed, H. (2001).Risk Management: An Analysis of Issues in Islamic Financial Industry. IRTI/IDB Occasional Paper, No. 5

Kothari, C. R. (2004). Research Methodology: Methods and Techniques (2nd ed.). New Delhi: New Age Publications (Academic).

KPMG International (2006). Enterprise Risk Management in the USA: A 2006 Report Card.

Sharpe W.F. (1964). Capital Asset Prices – A Theory of Market Equilibrium under Conditions of Risk. *Journal of Finance 19: 425–42.*

Weil J.(2012). The EU Smiled While Spain's Banks Cooked the Books. Bloomberg.

Zeze O.S. (2012).The Relationship between Credit Risk Management Practices and Financial Performance of Commercial Banks in Liberia. MBA Unpublished Research Project, University of Nairobi.

APPENDICES

Appendix i: Letter of introduction

Appendix ii: Questionnaire

Part A. Institutional Information

Name of Your Pension Schemes	
Please indicate the name of the contact person for this questionnaire and your position in the Pension scheme.	Name: Position:
To which of the following types of Pension schemes does your organization belong?	Defined benefit Pension scheme ☐ Defined contribution Pension ☐
Is the Pension scheme exposed to the following types of financial risk?(Tick as many as appropriate)	Market(Price) Risk ☐ Liquidity Risk ☐ Credit Risk ☐ Foreign Exchange Risk ☐ Interest rate Risk ☐ Others (Specify)……………………….

Part B-Risk Management Environment

	Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
1. There is a formal system of Risk Management in the Pension scheme.					
2. The Board of directors outline the overall risk objectives.					
3. There is a section/department responsible for identifying, monitoring, and controlling various risks.					
4. The Pension scheme have internal guidelines/rules and concrete procedures with respect to the risk management system.					
5. The Pension scheme has the					

policy of diversifying investment across different sectors.	52				
6. Your Pension scheme complies with Pension regulation framework					
7. Your Pension scheme has adopted and utilized Revised CBK Financial Risk management Guidelines					
8. Your Pension scheme has adopted and utilized Revised CBK Prudential Guidelines					
9. There is a budgetary allocation to the risk management function.					

Part C-Risk Measurement

	Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
1. There is a computerized support system for estimating the variability of earnings and risk management.					
2. The Pension scheme regularly conducts simulation analysis and measure benchmark (interest) rate risk sensitivity.					
3. The Pension scheme uses Gap Analysis					
4. The Pension scheme uses Duration Analysis					
5. The Pension scheme uses Maturity Matching Analysis					
6. The Pension scheme uses Value at Risk analysis					
7. The Pension scheme uses Estimates of Worst Case scenarios/stress testing for risk analysis.					
8. The Pension scheme use Risk Adjusted Rate of Return on Capital (RAROC)					

	Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
9. The Pension scheme use has other Internal Risk Rating System					

Part D-Risk Mitigation

	Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
1. There are Derivatives instruments to mitigate financial risk.					
2. The credit limits for individual counterparty are set by a committee.					
3. There are mark-up rates on assets set taking account of the risk factors or asset grading.					
4. The Pension scheme regularly (weekly) compiles a maturity ladder chart according to settlement date and monitor cash position gaps.					
5. The Pension scheme regularly conducts simulation analysis and measure benchmark (interest) rate risk sensitivity.					
6. The Pension scheme has a quantitative support system for assessing customers' credit standing					
7. There is credit rating of prospective investors.					

Part E-Risk Monitoring

	Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
1. The Pension scheme periodically reappraises collateral (asset).					
2. The Pension scheme confirms a guarantor's intention to guarantee loans with a signed document.					
3. For international loans, the Pension scheme regularly reviews country ratings.					
4. The Pension scheme monitors the borrower's business performance after loan extension.					
How often does the Pension scheme produce the following reports?	**Annually**	**Quarterly**	**Monthly**	**Weekly**	**Daily**

5. Credit risk report					
6. Market risk report					
7. Interest rate risk report					
8. Liquidity risk report					
9. Foreign exchange risk report					
10. Capital at Risk					

Part F- Internal Controls

	Strongly disagree	Disagree	No opinion	Agree	Strongly Agree
1. The Pension scheme have put in place an internal control system capable of swiftly dealing with newly recognized risks arising from changes in environment, etc.,					
2. There is a separation of duties between those who generate risks and those who manage and control risks.					
3. The Pension scheme have countermeasures (contingency plans) against disasters and accidents.					
4. The Internal Auditor verify the authenticity of accounts and risk reports prepared.					
5. The Pension scheme has backups of software and data files.					
6. There is a Risk Committee in the Board Level.					

Appendix iii: Pension Schemes Listing

No	PENSION SCHEME NAME	No	PENSION SCHEME NAME
1	ALEXANDER FORBES PF 2	33	KAA PENSION SCHEME
2	NIC BANK PENSION SCHEME	34	NBK PENSION SCHEME
3	BAMBURI CEMENT SRBS	35	KNH SRBS
4	CONSOLIDATED BANK SRBS	36	KWS PENSION FUND
5	BAT KENYA RETIREMENT FUND	37	CITI BANK SRBS
6	BOC KENYA SBS	38	HFCK SRBS
7	COMMERCIAL BANK OF AFRICA SRBS	39	NSSF KENYA SRBS
8	CENTRAL BANK OF KENYA SRBS	40	GENERAL MOTORS SRBS 2006
9	CMC SRBS	41	NHC SRBS
10	NAMPAK PENSION SCHEME	42	KNEC SRBS
11	EABL SRBS	43	STANDARD GRP. SRBS
12	GLAXO SMITHKLINE SRBS	44	STANDARD CHARTERED BANK SRBS
13	KENYA COMMERCIAL BANK SRBS	45	UNILEVER KENYA SRBS
14	TOTAL KENYA SRBS	46	UNION OF EA SRBS
15	KPA SRBS	47	KENGEN SRBS
16	KPC SRBS FUND	48	CONSOLIDATED BANK SRBS
17	KENYA AIRWAYS PROVIDENT FUND	49	HELB SRBS
18	TOYOTA KENYA SRBS	50	VIVO ENERGY PROVIDENT
19	KTDA PROVIDENT	51	GENERAL MOTORS PENSION FUND
20	KTDA PENSION	52	OXFAM PROVIDENT FUND
21	LOCAL AUTHORITIES PENSION FUND	53	CONSOLIDATED BANK SRBS
22	KENYA-RE SRBS	54	KEPHIS PROVIDENT FUND
23	OCTAGON PENSION SCHEME	55	SKF (K) LIMITED PENSION SCHEME
24	THE FINLAY KENYA PROVIDENT FUND	56	ACTIONAID KENYA STAFF PENSION SCHEME
25	SASINI LIMITED STAFF PENSION SHEME	57	NAMPAK KENYA LIMITED PROVIDENT FUND
26	EAST AFRICA CABLES LIMITED STAFF PROVIDENT FUND	58	BATA SHOE COMPANY (KENYA) LIMITED STAFF RBS
27	ECOBANK LIMITED SRBS	59	NATION MEDIA GROUP SRBS
28	VENUS TEA BROKERS LIMITED SRBS	60	THE FINLAY KENYA PF
29	MADISON INSURANCE COMPANY LIMITED SRBS	61	ATLAS COPCO EASTERN AFRICAN LTD SPF
30	NAS AIRPORT SERVICES SPF	62	WRIGLEY KENYA PF
31	AFYA SACCO SOCIETY LTD SRBS	63	SCHINDLER LTD SPS
32	MARIANISTS RBS	64	OXFAM SPF

Appendix iv: Sample of Risk-Return Analysis of the Pension Schemes

Pension Scheme Number 1 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.53%	1.00%	2.36%	1.43%
Mean return	**1.39%**	**1.07%**	**1.95%**	**1.39%**
Maximum return	7.16%	7.33%	16.90%	9.67%
Minimum return	-4.61%	-4.61%	-29.22%	-6.26%
Variance	0.05%	0.04%	0.48%	0.12%
Standard Deviation	7.75%	6.86%	23.96%	12.09%

Pension Scheme Number 2 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.19%	1.19%	2.68%	1.43%
Mean return	**1.25%**	**1.32%**	**1.79%**	**1.36%**
Maximum return	7.78%	10.12%	18.90%	9.44%
Minimum return	-5.03%	-2.86%	-22.53%	-7.03%
Variance	0.05%	0.05%	0.41%	0.13%
Standard Deviation	8.09%	7.61%	22.27%	12.27%

Pension Scheme Number 3 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.26%	0.98%	2.59%	1.43%
Mean return	**1.31%**	**1.08%**	**1.69%**	**1.35%**
Maximum return	8.59%	6.67%	17.30%	8.07%
Minimum return	-5.68%	-7.17%	-22.01%	-7.00%
Variance	0.07%	0.06%	0.39%	0.12%
Standard Deviation	9.16%	8.69%	21.75%	11.96%

Pension Scheme Number 4 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.43%	1.11%	2.38%	1.43%
Mean return	**1.27%**	**1.04%**	**1.59%**	**1.38%**
Maximum return	6.86%	13.22%	16.32%	8.67%
Minimum return	-5.38%	-7.99%	-21.88%	-6.25%
Variance	0.06%	0.22%	0.39%	0.12%
Standard Deviation	8.49%	16.23%	21.50%	11.98%

Pension Scheme Number 5 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.31%	0.90%	2.56%	1.43%
Mean return	**1.17%**	**0.83%**	**1.48%**	**1.43%**
Maximum return	8.39%	9.37%	16.98%	9.67%
Minimum return	-6.48%	-8.54%	-21.11%	-6.25%
Variance	0.07%	0.07%	0.38%	0.12%
Standard Deviation	9.19%	9.43%	21.36%	12.04%

Pension Scheme Number 6 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.74%	0.90%	2.87%	1.43%
Mean return	**1.49%**	**1.83%**	**1.81%**	**1.41%**
Maximum return	5.04%	9.37%	9.97%	9.67%
Minimum return	-4.63%	-8.54%	-13.45%	-6.25%
Variance	0.05%	0.07%	0.25%	0.12%
Standard Deviation	7.56%	9.43%	17.40%	12.05%

Pension Scheme Number 7 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.11%	0.98%	2.38%	1.43%
Mean return	**1.17%**	**1.12%**	**1.51%**	**1.36%**
Maximum return	8.24 %	5.70%	16.53%	9.67%
Minimum return	-5.14%	-4.96%	-21.51%	-6.25%
Variance	0.06%	0.05%	0.36%	0.12%
Standard Deviation	8.49%	7.63%	20.67%	12.02%

Pension Scheme Number 8 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.31%	0.90%	2.56%	1.59%
Mean return	**1.17%**	**0.83%**	**1.48%**	**1.46%**
Maximum return	8.39%	9.37%	16.98%	9.67%
Minimum return	-6.46%	-8.54%	-21.11%	-6.25%
Variance	0.07%	0.07%	0.38%	0.12%
Standard Deviation	9.19%	9.43%	21.36%	12.06%

Pension Scheme Number 9 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.53%	0.90%	2.83%	1.59%
Mean return	**1.21%**	**0.97%**	**1.74%**	**1.52%**
Maximum return	8.24%	9.48%	17.59%	9.67%
Minimum return	-6.49%	-8.78%	-22.05%	-6.25%
Variance	0.08%	0.08%	0.40%	0.12%
Standard Deviation	10.07%	9.96%	22.01%	11.81%

Pension Scheme Number 10 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.21%	0.97%	2.58%	1.43%
Mean return	**1.24%**	**1.02%**	**1.76%**	**1.39%**
Maximum return	6.13%	9.33%	18.87%	8.86%
Minimum return	-4.59%	-6.23%	-23.26%	-6.25%
Variance	0.05%	0.07%	0.42%	0.12%
Standard Deviation	7.47%	9.01%	22.47%	11.94%

Pension Scheme Number 11 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.21%	0.97%	2.58%	1.43%
Mean return	**1.24%**	**1.02%**	**1.76%**	**1.37%**
Maximum return	6.13%	9.33%	18.87%	8.67%
Minimum return	-4.59%	-6.23%	-23.26%	-6.25%
Variance	0.05%	0.07%	0.42%	0.12%
Standard Deviation	7.47%	9.01%	22.47%	11.96%

Pension Scheme Number 12 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.20%	1.34%	2.52%	1.43%
Mean return	**1.23%**	**1.04%**	**1.56%**	**1.60%**
Maximum return	7.49%	7.67%	17.75%	9.27%
Minimum return	-5.61%	-6.47%	-22.84%	-4.58%
Variance	0.05%	0.08%	0.40%	0.10%
Standard Deviation	7.87%	9.82%	21.79%	11.01%

Pension Scheme Number 13 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.19%	1.19%	2.68%	1.43%
Mean return	**1.25%**	**1.32%**	**1.79%**	**1.49%**

	Total Fund	Fixed Income	Equities	Offshore
Maximum return	7.78%	10.12%	18.90%	8.89%
Minimum return	-5.03%	-2.86%	-22.53%	-6.05%
Variance	0.05%	0.05%	0.41%	0.11%
Standard Deviation	8.09%	7.61%	22.27%	11.46%

Pension Scheme Number 14 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.19%	1.19%	2.68%	1.43%
Mean return	**1.25%**	**1.32%**	**1.79%**	**1.57%**
Maximum return	7.78%	10.12%	18.90%	8.74%
Minimum return	-5.03%	-2.86%	-22.53%	-4.58%
Variance	0.05%	0.05%	0.41%	0.10%
Standard Deviation	8.09%	7.61%	22.27%	10.92%

Pension Scheme Number 15 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.20%	0.94%	2.73%	1.43%
Mean return	**1.17%**	**1.13%**	**1.46%**	**1.50%**
Maximum return	6.07%	26.36%	16.61%	7.99%
Minimum return	-7.15%	-18.79%	-21.31%	-4.58%
Variance	0.07%	0.23%	0.36%	0.10%
Standard Deviation	9.01%	16.53%	20.91%	11.04%

Pension Scheme Number 16 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.22%	1.15%	2.47%	1.43%
Mean return	**1.20%**	**1.15%**	**1.50%**	**1.42%**
Maximum return	8.78%	7.00%	16.57%	9.07%
Minimum return	-6.04%	-6.48%	-21.26%	-6.00%
Variance	0.07%	0.06%	0.37%	0.12%
Standard Deviation	9.40%	8.61%	21.03%	11.87%

Pension Scheme Number 17 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.24%	0.92%	2.47%	1.43%
Mean return	**1.24%**	**1.01%**	**1.50%**	**1.37%**
Maximum return	8.11%	5.94%	16.57%	8.22%
Minimum return	-5.34%	-5.20%	-21.26%	-6.25%
Variance	0.06%	0.05%	0.37%	0.12%
Standard Deviation	8.82%	7.70%	21.03%	11.88%

Pension Scheme Number 18 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.27%	0.92%	2.49%	1.43%
Mean return	**1.23%**	**1.01%**	**1.66%**	**1.41%**
Maximum return	6.66%	5.94%	17.51%	7.90%
Minimum return	-5.53%	-5.20%	-22.40%	-4.89%
Variance	0.06%	0.05%	0.40%	0.11%
Standard Deviation	8.76%	7.70%	21.80%	11.51%

Pension Scheme Number 19 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.39%	0.98%	2.55%	1.42%
Mean return	**1.28%**	**1.02%**	**1.64%**	**1.39%**
Maximum return	6.66%	8.93%	16.90%	8.80%
Minimum return	-5.53%	-7.18%	-21.29%	-6.46%
Variance	0.06%	0.08%	0.38%	0.12%
Standard Deviation	8.76%	9.67%	21.45%	11.89%

Pension Scheme Number 20 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.31%	0.90%	2.56%	1.43%

Mean return	**1.17%**	**0.83%**	**1.48%**	**1.37%**
Maximum return	8.39%	9.37%	16.98%	8.22%
Minimum return	-6.48%	-8.54%	-21.11%	-6.58%
Variance	0.07%	0.07%	0.38%	0.12%
Standard Deviation	9.19%	9.43%	21.36%	11.92%

Pension Scheme Number 21 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.30%	1.19%	1.95%	1.42%
Mean return	**1.24%**	**1.04%**	**1.81%**	**1.39%**
Maximum return	8.13%	13.42%	19.50%	7.71%
Minimum return	-12.60%	-14.07%	-29.22%	-7.05%
Variance	0.11%	0.16%	0.49%	0.12%
Standard Deviation	11.36%	13.64%	24.31%	11.99%

Pension Scheme Number 22 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.45%	0.98%	2.49%	1.43%
Mean return	**1.22%**	**1.08%**	**1.65%**	**1.40%**
Maximum return	5.74%	11.31%	16.07%	9.67%
Minimum return	-7.60%	-9.10%	-20.72%	-6.05%
Variance	0.07%	0.11%	0.36%	0.12%
Standard Deviation	9.19%	11.28%	20.90%	12.04%

Pension Scheme Number 23 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.41%	0.89%	2.50%	1.43%
Mean return	**1.20%**	**1.01%**	**1.56%**	**1.32%**
Maximum return	6.85%	5.54%	16.27%	7.71%
Minimum return	-6.34%	-7.61%	-20.76%	-7.13%
Variance	0.07%	0.05%	0.39%	0.12%
Standard Deviation	9.25%	7.94%	21.56%	12.05%

Pension Scheme Number 24 Analysis

	Total Fund	Fixed Income	Equities	Offshore
Median return	1.74%	0.98%	2.87%	1.43%
Mean return	**1.49%**	**0.83%**	**1.81%**	**1.37%**
Maximum return	5.04%	9.37%	9.97%	9.17%
Minimum return	-4.63%	-8.54%	-13.45%	-7.03%
Variance	0.05%	0.07%	0.25%	0.12%
Standard Deviation	7.56%	9.43%	17.40%	12.13%