EMPIRICAL INVESTIGATION INTO THE PORTFOLIO PERFORMANCE MEASURES USED BY PENSION FUNDS MANAGERS AND THE CHALLENGES THEY FACE IN PORTFOLIO MANAGEMENT IN KENYA
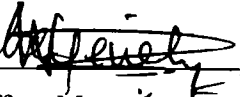
BY

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A MANAGEMENT RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT FOR DEGREE OF MASTERS OF BUSINESS ADMINISTRATION (MBA) OF THE UNIVERSITY OF NAIROBI

DECLARATION

I hereby declare that this management research paper is my original work. It has not been presented by any other person whatsoever from the University of Nairobi or any other institution.

Signed: _____   _36/10/2002_

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This project has been submitted for examination with my approval as University Supervisor.

Signed: _____   _30/10/2002_

Mr. Cyrus Iraya   Date

DEDICATION

This project is dedicated to my late brother Joseph for his academic guidance and support. I highly appreciate his encouragement and willingness to bring the best out of me in my incessant search for a sunlight pathway of hope and fulfilment.

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ACKNOWLEDGEMENT

ABSTRACT

The research involves an investigation into portfolio performance measures used by pension fund managers registered under Retirement Benefits Authority (RBA). It also sought information on the most prevalent challenges faced by these managers in portfolio management.

The response is obtained using a questionnaire from the pension fund and investment managers of the registered fund managers in Kenya.

The results show that most investment managers are aware of the portfolio performance measures yet only one of the nine respondents use the measures in pension fund portfolio management.

The research also indicates that the biggest challenges faced by the pension fund managers are associated with measurement of risk of portfolio returns and finding a suitable benchmark with which to compare the funds performance.

CHAPTER ONE

1.   INTRODUCTION

1.1   Background

The growth in assets managed by investment companies including money market funds, equity and stock mutual funds, and unit trusts in the last two decades of the 20th century has been phenomenal. According to Board of Directors of Federal Reserve System (1999), Pension funds and mutual funds held assets in excess of US$1.5 trillion in U.S.A alone. The growth in size of government and private pension funds not only make these institutions important but their role in the flow of funds across economic sectors is significant. Pension funds and mutual funds provide financial security for retirement. Investment companies also provide professional investment management and diversified portfolio to small savers at reasonable costs.

Liaw and Moy (1999) notes that the managers of these institutions face just as many challenges as do those of depositories, finance companies, securities firms and insurance firms in the current economic environment. According to Weston and Copeland (1998, 329) a portfolio manager has to select the best combination of risk and return to maximize the wealth of shareholders. The risk-return trade-off is required on assumption that all decision makers are risk averse and prefer higher mean return at a given level of risk or low variance at a given level of mean return.

Pension funds, as portfolios, have different sizes and constituent securities or investments. It is thus difficult to compare the performance of one portfolio with another hence the need for a benchmark. The appropriate benchmark for one portfolio will not be suitable for the other. Managers must come up with portfolio performance composites yet these composites are not a panacea to measurement problems. Reilly and Brown (2000) have identified the various portfolio performance measures available which include Sharpe, Treynor, Jensen, Information ratio and Fama's Net Selectivity measures. The first four measures are a single parameter measures and thus have a bias since risk is not independently analysed from return. The investor and portfolio manager may be different people with different risk

profiles which need to be harmonized in portfolio management. Therefore, faced with regulatory challenges, problem of risk-return trade-off, use of appropriate performance measure and the emergence of Agency problem, Liaw and Moy (1999) states that portfolio managers face enormous task balancing all these parameters to satisfy the "shareholders".

1.2 Measuring Portfolio Returns

The determination of portfolio performance is an important part of the investment business. Liaw and Moy (1999) suggest that attracting and keeping investors is highly dependent on the performance of a fund or a portfolio manager. In addition, compensation in the money management industry is largely based on the performance of a fund relative to some pre-defined benchmark.

In order to evaluate investment performance, there is need to calculate return on the portfolio. The return has two components:

1. Capital gains due to change in price

2. Income distributions (dividends)

These can be incorporated into a formulae as follows:

$$R_t = \frac{(MV_t - MV_{t-1}) + D_{t-1}}{MV_{t-1}}$$

R_t is total return during a specified time period t

MV_t is market value of asset at end of period t

MV_{t-1} is market value of asset at beginning of period t and

D_{t-1} is accrued dividend income between time t_{-1} and t

There are various methods of determining the rate of return as identified by Dietz and Kirschman (1990). Firstly, the Dollar-weighted or internal rate of return method involves determination of interest rate that equates the present value of the cash flows to the original cost of investment. This method includes cash inflows and outflows which are largely beyond the control of fund managers.

Secondly, the Time-weighted returns (geometric returns) method which does not depend on the timing of cash flows. Time-weightings considers the compounding of returns and is the method used in most industries. The returns (R) are determined as follows:

$$R = \left[(1+R_1)(1+R_2)...(1+R_n)\right]^{1/n}$$

Where: R_1, R_2 ... R_n is Returns (%) of period 1, 2, ..., n and

      n is number of periods.

Thirdly, the arithmetic aeturns method which simply involves determination of the arithmetic averages of returns over the compounding interval. This method does not account for the compounding of interest formally, it can be explained using the following formulae:

$$Return = \frac{\sum_{t=1}^{n} R_t}{n}$$

Where R_t is % return during period t, and

      n is number of periods

Generally, time-weighted method is used with historical data because the compounding of returns is assumed while the arithmetic returns are used for forecasting. In cases where an asset's returns are fluctuating, the arithmetic return will be higher than the geometric return.

1.3   Performance Composites and Benchmarks Construction

When examining the performance of portfolios under a manager, it is necessary to separate the portfolios by investment objective. Reilly and Brown (2000) has documented industry wide performance presentation standards to allow for greater uniformity, comparability, accuracy and fairness in the presentation of performance of fund portfolios. Liaw and Moy (1999) states that the most important concept of performance presentation standards is the definition of a composite which is a collection of portfolios that represents a similar strategy or investment objective. Bailey et.al (1990) suggests that the standards were set to deal with several practices that hindered comparability of performance. They identify such practices as:

- *Representative accounts* – This is where managers chose to present only the returns of their best performing accounts. They thus failed to present poor performing accounts causing bias in presentation of results.
- *Survivorship bias* – managers presented return performance that excluded accounts whose poor performance led to termination of their jobs. This ensured their survival in the job market.
- *Profitability of investment results* – managers presented performance that was not the record of the firm but rather the manager's record from previous employer. This happened when a manager is persistently under-performing in his present job.
- *Varying time intervals* – managers presented performance for a selected time period during which the fund produced outstanding returns. This would make it impossible to carry out a long term evaluation of manager's performance when markets returns were declining (low performance) and increasing (high performance).

In order to compare a portfolios performance to a benchmark, an appropriate benchmark must be constructed for each type of manager or type of fund. This is because different portfolios may consist of different securities and different managers may have different portfolio management styles. Bailey et.al (1990) identifies the characteristics necessary for any useful benchmark. Firstly the benchmark must be unambiguous which means that the names and weights of securities comprising the benchmark are clearly delineated. The definition of the benchmark should be clear indicating the types, names, number and weightings of security comprising it. Secondly, it ought to be investable where an option is available to forego active management and simply hold the benchmark. Thirdly, it should be Measurable in which case it is possible to readily calculate the benchmark's own return on a reasonably frequent basis e.g monthly, quarterly, semi-annually, among others to compare with periodic returns of a portfolio. Fourthly, it should reflect the current investment opinions in which case the manager must have current investment knowledge of the securities that make up the benchmark. This knowledge on securities can be positive, negative or neutral. Fifthly, it should be specified in advance. This should be achieved by constructing it prior to the start of an evaluation period so that it can act as a target of the portfolio performance. Lastly, the benchmark must be appropriate which requires consistency with the manager's investment style or biases.

Bailey et.al (1990), states that the managers performance to be compared with the benchmark can be decomposed into three components:

1. The return due to the market index
2. The return due to a manager's style which is defined to be the difference between the market index and the manager's benchmark.
3. The returns due to active management.

1.4 Statement of the Problem

The managers of pension funds face many challenges just like those at depositories, finance companies, securities and insurance firms. In Kenya, pension funds are portfolios facing various regulations from Retirement Benefits Authority (RBA) ranging from regulations on investment in categories of assets, valuation of assets, financial provisions and statements and retirement benefits levy. According to legal notice No.123 (Retirement Benefit Act), a fund manager shall,

> "submit to the scheme, ... at least quarterly from the date of commencement of the financial year at the scheme or pooled fund:
> i) A valuation of the scheme fund and all the investment including details of the cost of such investments and their estimated yields.
> ii) A report reviewing the investment activity and performance of the investment portfolio ...."

The legal requirement is such that fund managers should evaluate the performance of their investment portfolios. The various portfolio performance measures available to fund managers include Sharpe Measure, Treynor Measure, Jensen Measure (alpha), Information Ratio, Modigliani and Modigliani (M^2) Measure and Fama Net Selectivity Measure. According to Reilly and Brown (2000, 1153),

> "the striking feature of all these portfolio performance measures is that all are highly positively correlated with one another but not perfectly so. This suggests that although the measures provide a generally consistent assessment of portfolio performance when taken as a whole, they remain distinct at an individual level. It is best to consider these composites collectively and that the user must understand what each means".

Roll (1981) notes that all equity portfolio performance measures are derived from the Capital Asset Pricing Model (CAPM) which assumes existence of a market portfolio,

consisting of all risky assets in the economy. Such a portfolio is assumed to be completely diversified. This is a theoretical portfolio which may not exist in real world because it does not constitute all firms in the market. It only has a sample of quoted firms. The problem arises in finding a realistic proxy for this theoretical portfolio. This lack of completeness has implications for measuring portfolio performance. When evaluating portfolio performance, the performance measures largely use the market portfolio as the benchmark to determine the risk measures. This beta could differ from that computed using true and not proxy market portfolio. Brown and Brown, (1987), in an empirical test, documented a considerable amount of "ranking reversal" when the definition of market portfolio was changed in a Jensen's alpha analysis of a sample of well-established mutual funds.

Radcliffe (1997) explains the serious questions that have arisen about the validity of the CAPM-based performance statistics. No empirical test to date has been able to show that expected and realized returns are closely tied to beta estimates employed in the tests. This, he suggests, could be due to inadequate beta estimates or inadequacy of the CAPM. Fama and French found no relationship between future returns and prior beta estimates. There is also a serious problem with the proxy one uses to estimate aggregate market returns since it does not constitute all firms in the market.

In an effort to address this problem, Grinblatt et.al (1993) attempted to avoid the conflict altogether by introducing a performance measurement process that did not require benchmarks, based on the characteristics of the stock held such as size of the firm and book-to-market ratios. Given the problem with benchmarks in market portfolio, the beta factor as a measure of systematic risk and use of total risk of market returns yet unsystematic risk is largely reduced through diversification, this study sets to find out the portfolio performance measures used by fund managers, why they use the measures, and how they identify the suitable benchmarks.

1.5   Objectives of the Study

The study is concerned with portfolio performance measures used by pension fund managers and the challenges they face in portfolio management in Kenya. The specific objectives of the study are:

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1. To establish whether pension fund managers in Kenya are aware of the various portfolio performance measures and which measures they use in evaluating their portfolio performance.

2. To establish the benchmarks used by pension fund managers against which their performance is evaluated.

3. To identify the challenges faced by pension fund managers in Kenya in portfolio management.

1.6 Importance of the Study

The project is of paramount importance to:

(a) Portfolio managers – Different portfolios with different constituent investments require different benchmarks. Portfolio managers of mutual funds, real assets, unit trusts, collective investment schemes among others, will learn on the most appropriate performance measures to apply in their portfolios.

(b) The benchmarks available are applied to different portfolios. The research will enable portfolios managers to identify the appropriate portfolio benchmarks against which their performance will be evaluated. A suitable benchmark is defined from the perspective of it being specified in advance, measurable investible and unambiguous among other features.

(c) Academic community – This study will provide a body of knowledge regarding portfolio performance measures and benchmarks in Kenya. It will also provide a basis for further research in the related field.

(d) The researcher will derive the indepth knowledge of what happens in practice and whether there is any divorce between theory and practice regarding the use of portfolio performance measures.

CHAPTER TWO

LITERATURE REVIEW

2.1 Working Definitions

1. *Pension Fund*

    For the purpose of the study, the definition of pension fund given by Retirement Benefit Authority (RBA) Act shall be adopted. It defines a pension fund as,

    "a defined contribution scheme in which members' and employers' contributions are fixed either as a percentage of pensionable earnings or as a shilling amount, and a member's retirement benefits has a value equal to those contributions, net of expenses including premiums paid for insurance of death or disability risks, accumulated in an individual account with investment return and any surplus or deficits as determined by the trustees of the scheme".

2. *Performance*

    According to Longman dictionary of Contemporary English, performance is the ability of a person to do well. However, this performance needs to be compared with a yardstick or benchmark to determine whether it is good or poor.

3. *Portfolio*

    Brigham and Gapenski (1994) defines a portfolio as a combination of assets. This can be real or financial (securities) assets. The working definition of a portfolio will be according to the categories of assets specified in Retirement Benefit Authority (RBA) Act (see Appendix VIII) in which pension fund manager can invest to form an investment portfolio.

4. *Diversification*

    Empirical study by Wagner and Lau (1971) describes diversification as reduction in total risk as the number of securities in the portfolio increases. This definition will be used for the purpose of the study.

5. *Risk*

    Reilly and Brown (2000, 260) defines risk as "uncertainty of future outcomes" or "the probability of an adverse outcome".

2.2   Evolution of Portfolio Evaluation

Cohen et.al (1987) states that prior to development of the modern portfolio theory, most observers tended to measure a portfolio manager's performance on a simple rate of return basis, usually comparing the portfolio return with some broad yardstick such as the index. Little or no adjustment was made for risk borne by the portfolio and no attempt was made to measure the sources of performance which includes asset allocation, security valuation and market timing. Reilly and Brown (2000) also notes that at one time, investors were quite aware of concept of risk but did not know how to quantify and measure it. Portfolio performance was evaluated almost entirely on the basis of rate of returns. It was only on the development of portfolio theory in 1960's that showed investors and investment managers how to quantify and measure risk in terms of variability of returns. There was no single measure that combined both risk and return but the researchers grouped portfolios into similar risk classes based on variance of return and then a comparison with the rates of return for alternative portfolios was directly done within the risk classes developed.

Portfolio evaluation, according to Elton and Gruber (1995), has evolved dramatically over the last two decades. The acceptance of modern portfolio theory has changed the evaluation process from crude return calculation to rather detailed explorations of risk and return and the sources of each. To this end it is possible to understand how well the fund has done relative to other funds and tell the extent to which a fund manager followed the funds general policies in achieving the investment objectives. Portfolio performance measures of modern day which adjust for risk and return combinations will involve determination of level of diversification and timing of investments by the manager.

2.3   The Conventional Theory and Importance of Performance Evaluation

Bodie et.al (2002) notes that the simplest and most popular way to adjust returns for portfolio risk is to compare the rates of returns with those of other investment funds with similar risk features. In this case, the growth equity stock funds, for example, are grouped into one "universe". The time weighted average returns of each fund within the universe are ordered and each manager receives a percentile ranking depending on relative performance with the comparison universe. Bodie et.al notes that a manager with the ninth – best

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performance in a universe of one hundred funds would be the ninetieth percentile manager meaning her performance was better than 90% of all competing funds over the similar evaluation period.

Reilly and Brown (2000) describes the above theory as peer group comparison where the peer group refers to the universe described by Bodie et.al. Reilly and Brown notes that the use of peer group comparison has several potential problems including the fact that it does not make any explicit adjustment for the risk level of portfolios in the universe. The investment risk is only implicitly considered to the extent that all the portfolios in the universe have essentially the same level of volatility. The universe in peer group may mix portfolios with different investment styles and it is also impossible to form a truly comparable peer group that is large enough to make the percentile rankings valid and meaningful. Bodie et.al (2002) also notes that managers with similar investment styles are compared but the ranking by percentiles may be misleading especially where within a particular universe, some managers concentrate on particular sub-groups so that portfolio characteristics are not truly comparable as in the case where within the equity universe, one manager may concentrate on high beta stocks while for fixed income universes, maturity periods can vary across manager.

According to Cowdell (1997) a balanced portfolio guard against failure in a specific area should be well diversified, having elements of liquidity, fixed interest holdings and equity content. These three areas provide accessibility guaranteed income and monetary capital growth from the equity content. Sharpe et.al (1999) states that the idea behind evaluation of performance is to compare the returns obtained by the manager through active management with returns that could have been obtained for the client if one or more appropriate alternative portfolios had been chosen for investment. The reason for this is that performance should be evaluated on a relative basis not on an absolute basis. Elton and Gruber (1995) documents that evaluation of portfolio performance is important not only to individual or institution who engages a professional money manager but also to the individual who invests personal funds. It thus involves more than rating how well the investor performed compared to others but it is important to understand what caused the performance. For example, were the extra benefits or returns from the market timing or stock selection superiority. Cohen et.al (1987) notes that the measurement of investment

results using performance measures permits both mangers and their clients to answer better the questions relating to whether the manager actually followed the pre-established policies in terms of acceptable risk levels and whether the returns achieved equaled to better or worse than the returns attributable to the risk level assumed. The evaluation would also enable a client to establish whether the results of portfolio decisions were achieved via timing or by superior stock selection capabilities. The timing of the market would involve a conscious shifting of the beta factor in order to achieve a given level of returns for a given level of risk undertaken.

2.4   Risk-adjusted (composite) Portfolio Performance Measures

Cowdell (1997) notes that the risk of returns may relate to a fall in interest rate which reduces the yield fixed interest elements of a portfolio. Inflation on the other hand erodes the purchasing power of capital and interest. To minimize the interest rate and inflation risks, investment in shares is utilized. To minimize the risk of decline in dividends, diversification is required. Wagner and Law (1971) notes that in a completely diversified portfolio, unique returns arising from individual stocks in the portfolio should cancel out. This is because as the correlation of the portfolio with the market increases, unique risk declines and thus diversification occurs. Cowdell notes that research and conclusions from efficient market hypothesis and Random walk hypothesis show that investing in fifteen different sectors minimizes the risk of one share performing badly and having a drastic effect in the portfolio. An empirical study by Wagner and Law show that as the number of securities in a portfolio increases, the standard deviation of portfolio returns decreases but at a decreasing rate with further reductions in risk being relatively small after about ten securities are included in the portfolio.

Gardner et.al (2000) notes that even with reduction of unique risk, managers cannot eliminate the systematic risk caused by market based factors. This risk is measured by the Beta factor. He further notes that other most commonly used risk measures are standard deviation, value at risk (VAR), the Modigliani measure and asset class measures. The VAR provides an estimate of how much a firm's portfolio can decline with a given probability over a given time period thus it reports the likely range of losses based on normal distribution.

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Jack (1991) notes that in assessing the performance of a portfolio, it is necessary to consider both risk and returns. Ranking of portfolios average returns ignores the skill with which managers minimize the risk of the portfolio through diversification. According to Liaw and Moy (1999) Treynor developed the first risk-adjusted measure of portfolio performance that included risk. Treynor was concerned with a performance measure that would apply to all investors regardless of their risk preferences. He was thus focused on systematic risk which is largely undiversifiable. According to his earlier works of capital market items, he introduced a risk-free asset that was combined with different portfolios to form a straight portfolio possibility line which he designated as Treynors measure, T. The measure is also called Reward-to-Volatility Ratio (RVOL) and involves dividing the portfolio's average return in excess of risk-free return by its market risk (Beta).

$$RVOLp = \frac{ar_p - arf}{Bp}$$

Where: ar_p is the average returns of a portfolio over a given investment horizon,

arf is the average risk-free rate of return (interest rate on Treasury bills) over the same investment period and

Bp is the market risk of the portfolio shown by Beta of the portfolio.

Treynor (1965) postulated two components of risk. Firstly the risk resulting from unique fluctuations systematic risk. He introduced the characteristic line which defines the relationship between the rates of return for a portfolio over time and the rates of return for an appropriate market portfolio. The characteristic line indicates the relative volatility of portfolio returns in relation to returns for the aggregate market. The slope of the line is the Beta factor co-efficient. Sharpe et.al (1999) notes that a fund portfolio having an average beta that is greater than the market portfolio's beta of one indicates that it is relatively aggressive and if its average beta is less than one, it is relatively defensive.

Jack (1991) documents that Sharpe developed the second single parameter portfolio performance index using risk and return statistics. The measure denoted as S_p, and also called reward-to- variability ratio, is a measure of risk-adjusted performance that uses a benchmark based on the capital market line (CML). It measures returns relative to the total risk of the portfolio where total risk is the standard deviation of portfolio returns. The Sharpe measure is determined as follows:

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$$Sp = \frac{ar_p - arf}{\sigma_p}$$

Where ar_p is average return of the portfolio,

Arf is average risk-free returns, and

σ_p is standard deviation of portfolio returns.

The excess returns of a portfolio over the risk free return (ar_p - arf) is the risk premium. Reilly and Brown (2000) notes that Sharpe ratio indicates risk premium earned per unit of total risk. It thus evaluates a fund manager on the basis of both rate of return and diversification. For a completely diversified portfolio Sharpe and Treynor measures would be equal. Any difference in rank would come directly from difference in diversification where for a poorly diversified portfolio, Treynor's measure would yield a higher value than Sharpe performance measure. Both measures produce relative rankings of portfolio performance yet it cannot be said with certainty whether differences in performance of any two portfolios are statistically significant. Sharpe measure/index generates one number that is determined by both risk and return of the investment being evaluated. It is suitable for evaluating portfolios but less appropriate for evaluating the performance of individual assets because it measures total risk instead of systematic risk.

Gardner et.al (2000) notes that Sharpe and Treynor measures are based on the capital asset pricing model (CAPM) which assumes that investors can achieve any level of risk by investing in the fund with the highest Sharpe ratio regardless of the investors particular degree of risk aversion. The Sharpe measure is in particular universally acceptable to institutional investors and academics but the general public and financial advisers often do not understand or use the ratio.

To effectively evaluate the performance of manager, a broad stock market index (benchmark portfolio) is selected for comparison purposes. In selecting the portfolios, the client should be certain that they are relevant, feasible and known in advance. They should thus represent alternative portfolios that could have been chosen for investment instead of the portfolio being evaluated. The benchmark should reflect the objectives of the client.

To permit direct comparison of the portfolio returns with the benchmark portfolio returns, the benchmark portfolios may be restricted to portfolios perceived to have a similar levels of risk.

The Treynor measures, T_m for market portfolios is as follows:

$$T_m = \frac{\bar{R}_m - \bar{R}f}{B_m}$$

The Sharpe's measure for the market portfolio, (S_m) is as follows:

$$S_m = \frac{\bar{R}_m - \bar{R}f}{\sigma_m}$$

Where $\bar{R}_m$ is average market portfolio rate of return,

$\bar{R}f$ is risk free rate of return'

B_m is beta factor of market portfolio which is 1.0 and

σ_m is standard deviation of market portfolio returns.

Reilly and Brown (2000) notes that Treynor measure has a major weakness in case of exemplary performance indicated by a negative Beta factor or a very poor performance where portfolio average returns are less than the risk free rate. In both cases, the Treynor's measure would be negative. The negative Treynor measures give confusing results such that it is preferable to compute the expected rate of return for such portfolios using the security market line equation and compare this with the actual return. This comparison will indicate whether the actual return was above or below expectations.

Bodie et.al (2002) identifies the M^2 measure proposed by Graham Harvey and later popularized by Leah Modigliani and Franco Modigliani (hence M^2). Like the Sharpe ratio, the M^2 measure focuses on total volatility but its risk adjusted measure of performance has the easy interpretation of differential return relative to the benchmark index. The measure assumes an adjusted portfolio, P^*, which would have the same standard deviation as the index. This makes it easy to compare portfolio performance with market returns. The M^2 measure is formally computed as follows:

$$M^2 = rp^* - \bar{R}_m$$

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Where   rp* is returns of adjusted portfolio, and

$\bar{R}_m$ is market returns

According to Reilly and Brown (2000), Michael Jensen, in 1968, developed Jensen (alpha) measure which is largely premised on capital asset pricing model (CAPM). The CAPM expression for the expected one period return on any security/portfolio is as follows:

$$Eri = arf + \left(\bar{R}_{m-arf}\right)\beta i$$

Eri is expected return on portfolio i,

Arf is Risk free rate of return,

$\bar{R}_m$ is Expected return on the market portfolio of risky assets and

Bi is Systematic risk (beta coefficient) of portfolio i.

On assumption that CAPM is empirically valid, it is possible to express the expected returns formula in terms of realized rates of returns.

$$Ri = arf + (\bar{R}_m - Rf)Bi + \varepsilon i$$

Therefore, realized returns Ri, is a linear function of:

1)   Risk free rate, arf

2)   Risk premium that depends on systematic risk $(\bar{R}_m - Rf)Bi$.

3)   Random error term εi

Subtracting arf from both sides:

$$Ri - arf = (\bar{R}_m - Rf)Bi + \varepsilon i$$

If all assets and portfolios were in equilibrium, an intercept for the regression would not be expected. Superior portfolio managers who forecast market turns or consistently select undervalued securities earn higher risk premium than those implied by the model. That is, he would earn consistently positive random error items since actual returns consistently exceed expected returns implied by the model. Consistent positive differences cause a positive intercept while consistent negative differences (inferior performance) cause a negative intercept. Therefore:

$$Ri - arf = \alpha i + \left(\bar{R}_m - arf\right)\beta i + \varepsilon i$$

The αi (alpha) indicates whether the portfolio manager is superior or inferior in market timing and stock selection. A superior manager has a significant positive alpha because of

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consistent positive residuals. In contrast, an inferior manager's returns consistently fall short of expectations based on the CAPM model giving consistently negative residuals (alpha).

Jensen as quoted by Reilly and Brown (2000) argues that the performance of a portfolio manager with no forecasting ability but not clearly inferior equals that of a naïve buy-and-hold policy. Therefore alpha measure represents how much of the rate of return on the portfolio is attributed to the manager's ability to derive above-average returns adjusted for risk. Superior risk-adjusted returns indicate that the manager is good either at predicting market returns or selecting under valued issues for the portfolio or both. Jensen measure, just like Treynor measure, does not directly consider the portfolio manager's ability to diversify since it calculates risk premiums in terms of systematic risk. Jensen analysis of pension fund performance showed that complete diversification was a fairly reasonable assumption since funds typically correlated with the market at rates above 0.90.

Information ratio (appraisal ratio) (IR) performance measure was developed by Treynor and Black (1973). This statistic measures a portfolio average return in excess of a comparison or benchmark portfolio divided by the standard deviation of excess return.
IR is formally calculated as follows:

$$IR = \frac{R_i - R_b}{\sigma_{ER}} = \frac{ER_i}{\sigma_{ER}}$$

Where I.R is information ratio for portfolio I,

R_i is average returns for portfolio i during period t,

R_b is Average returns for benchmark (market) portfolio during period t,

Eri is excess returns of portfolio i and

σ_{ER} is Standard deviation of the excess returns during period t.

R_i - R_b represents the investors ability to use her talent and information to generate a portfolio return that differs from that of the benchmark against which her performance is being measured. The standard deviation of excess returns, σ_{ER}, measures the amount of residual or unsystematic risk that the investor incurred in pursuit of those excess returns. σ_{ER} is the tracking error of the investor's portfolio and it is the "cost" of active management.

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Information ratio is therefore a benefit-cost ratio that assesses the quality of the investor's information deflated by unsystematic risk generated by the investment process.

Grinold and Kahn (1995) have argued that a reasonable information ratio levels should range from 0.50 to 1.00 with an investor having an I.R of 0.50 being good and one with an I.R of 1.00 being exceptional. They studied the performance of more than 200 professional equity and fixed income portfolio managers with various investment styles over 10 year period. They found that the I.R of the median manager in each style group was positive but the ratio never exceeded 0.50. Further, no style group had more than three percent of its managers deriving an I.R in excess of 1.00.

2.5 Decomposition of Performance

Elton and Gruber (1995) notes that the overall performance of a portfolio is equal to the portfolio returns in excess of risk free rate. This is formally expressed as follows:
Overall performance = Portfolio returns – Risk free rate.
The overall performance is decomposed into measures of risk-taking and security selection skills. The total portfolio risk consist of investors risk and the manager's risk. Therefore:
Overall performance = portfolio risk + selectivity
Where portfolio risk = investors risk + manager's risk.
Selectivity indicates the excess returns of managed portfolio over unmanaged portfolio both of which have equal systematic risk. Selectivity is an indication of the manager's investment skills. It is a measure of difference between actual portfolio returns and realized market returns. It can be used to evaluate the degree of diversification where a manager may attempt to select undervalued stock and in the process forgo diversification of portfolio risk.

If the undervalued stocks would generate excess returns at the expense of diversification, then gross selectivity = net selectivity + diversification. This can be graphically shown as follows:

Figure 2.4.1: Decomposition of Performance
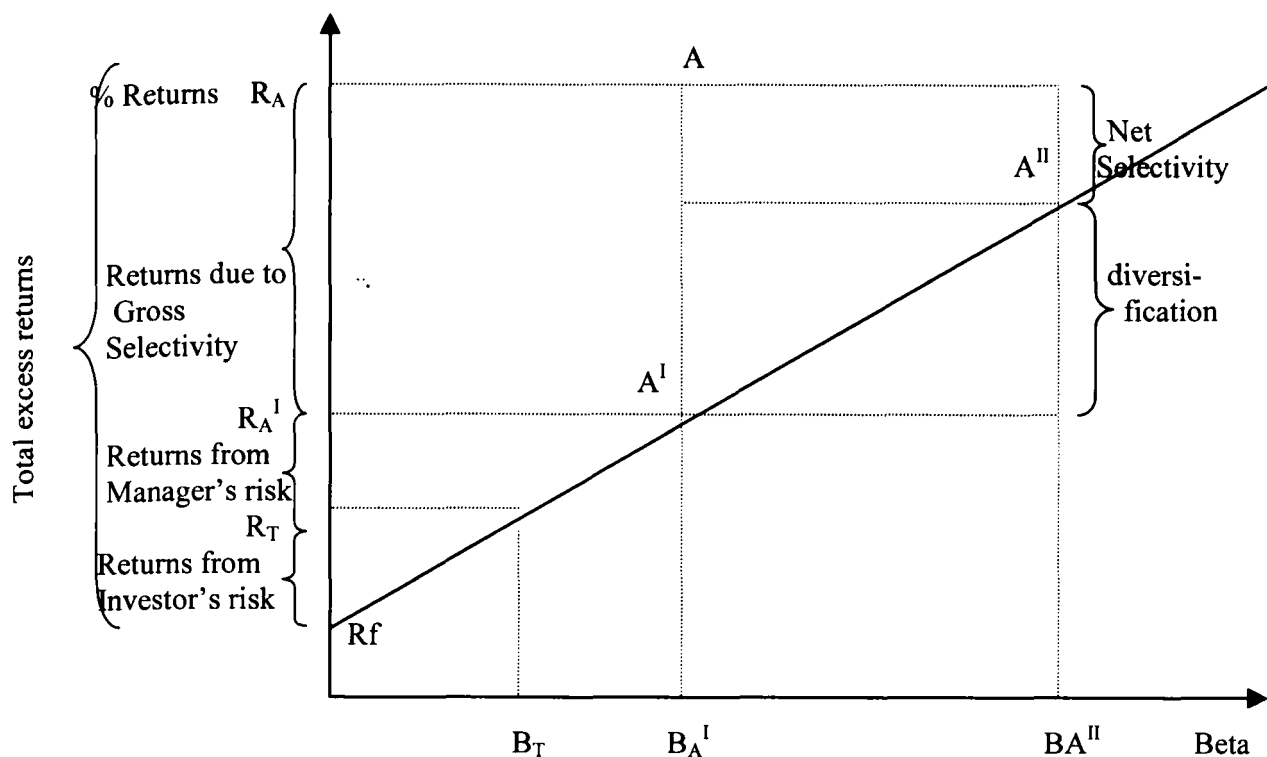
Where: $R_A - R_A^I$ = Returns from gross selectivity

$R_T - R_f$ = Returns from investors risk

$R_A^I - R_T$ = Returns from manager's risk

$R_A - R_f$ = Total excess returns

B_T = Beta pf investor's risk

B_A^I = Beta of investor's and manager's risk

B_A^{II} = Beta of total risk (systematic risk)

(Source: Jack C. Francis: "Investment Analysis and Management")

The diversification measure is always non-negative hence net selectivity will always be equal to or less than gross selectivity. Modigliani and Modigliani (1997) notes that if the investor is not concerned with diversification of the portfolio, only selectivity is vital in performance evaluation and hence gross selectivity is equal to net selectivity.

2.6   Relationship and Application of Performance Measures

Various performance measures have been used in U.S.A. An analysis of the relationship between the composite measures of performance and two measures of risk (standard

deviation and beta) for 200 random portfolios from New York Stock Exchange (NYSE) indicated a significant inverse relationship where the risk-adjusted performance of low risk portfolios was better than the comparable performance for high risk portfolios. According to Reilly and Brown (2000), Klemkosky, in 1973, examined the relationship between the risk-adjusted performance measures and risk measures using actual mutual fund data in contrast to the random portfolio data used by Friend and Brume in 1970. The results indicated a positive relationship between the composite – performance measure and the risk involved especially for Treynor and Jensen measures. It was concluded that although a bias might exist with the one parameter measures it is not easy to point the direction of bias. Reilly and Brown also notes that the performance measures are highly positively correlated and generally provide consistent assessment of portfolio performance when taken as a whole. However, they remain unique at individual level and the fund managers should thus consider them collectively. The correlation among alternative measures is summarized as follows:

Table 1: Correlation of Performance Measures

Performance Measure	Treynor	Sharpe	Jensen	Information Ratio	Net Selectivity
Treynor	-				
Sharpe	0.88	-			
Jensen	0.99	0.90	-		
Information ratio	0.97	0.91	0.97	-	
Net selectivity	0.83	0.98	0.86	0.86	-

Source: Reilly and Brown (2000, 1153)

Jack (1991) notes that there are common traps a portfolio manager may fall into which can shackle the portfolio performance. If the securities markets are highly efficient, a search for undervalued securities is not likely to yield returns that exceed those that could be obtained using a naïve buy-and-hold strategy. If the markets on the other hand are judged to be highly efficient, a passive portfolio management practice like indexing the portfolio to some market index may be the most cost-effective approach. Active portfolio management practices are only appropriate if there are significant market inefficiencies that can be legally and profitably exploited.

Gardner et.al (2000) documents that pension and fund managers often argue that they are unfairly judged by being compared with broad market indices when the objectives of the fund are based on particular investment strategies. The value investing strategy will attempt to find undervalued stocks with a low price – earning ratio and high yields. Growth funds strategy seeks long term capital appreciation with dividend yield incidentals while equity income funds attempt to provide a total return through income by investing in high yield stocks. The broad based specialty funds focus on major market subsection such as a small company or international stocks while concentrated specialty funds involves investing in a single industry such as I.T companies. Index funds mimick stock index such as the Nairobi Stock Exchange (NSE) – 20 share index.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Research design

The research was carried out through a survey. Mugenda and Mugenda (1999) notes that a survey research attempts to collect data from members of a population and describes existing phenomena by asking individuals about their perceptions, attitudes, behaviour or values. Moreover, it explores the existing status of two or more variables at a given point in time. Primary data collected from such a population or census is more reliable and upto date.

3.2   Population and Sample of Research Study

This was a census study where the entire population was studied. The population of the study was the pension fund managers (firms) registered under Retirement Benefit Authority (RBA). The respondents were individual investment managers of the registered fund managers. According to RBA, there are one thousand three hundred and twenty (1320) registered pension funds. Six hundred and fifty (650) of these pensions are under management of a registered fund manager indicating a compliance of 49.2% (as at 31st May 2002). There are eleven registered pension fund managers (see Appendix III). The fund managers are the one's managing 650 funds amongst themselves.

3.3   Data Collection Procedures

The data was collected using a "drop and pick later" structured Questionnaire [see appendix (ii)]. The respondents were investment managers of firms registered as pension fund managers by RBA. The use of structured questionnaire ensured consistency of questions to and answers from the respondents. A structured questionnaire was used since it is easier to administer, analyse and economical in terms of time and money. Mugenda and Mugenda (1999) notes that a questionnaire is one of the best tools of collecting primary data. Each questionnaire was preceded by a letter of introduction (see Appendix I).

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3.4   Data Analysis and Presentation

Data was analysed using both inferential and descriptive statistics. Descriptive statistics such as the mean, standard deviation and frequency distribution enabled the researcher to meaningfully describe the distribution of measurements. The use of descriptive statistics also indicated what number and percent of respondents use what performance measure, and benchmark index. The researcher was able to rank familiarity of fund managers with performance measures, the analysis of importance of the measures to the fund managers in addition to clear descriptions of challenges facing fund managers in portfolio management.

The inferential statistics used was correlation analysis which enabled the researcher to test the degree of relationship between familiarity with a portfolio performance measure and importance of the same to a pension fund manager.

Data was presented using frequency distribution tables and graphs.

CHAPTER FOUR

4.0   Data Analysis

For the purpose of data analysis, the eleven registered pension fund managers will be abbreviated as follows:

AIG Global Investment Company (East Africa)	-	AIG
Bardaystrust Investment Services Ltd	-	BISL
CFC Financial Services Ltd.	-	CFC
Co-op Trust Investment Services Ltd.	-	COOP
Genesis Kenya Investment Management Limited	-	GEN
ICEA Investment Services Limited	-	ICEA
Jubilee Financial Services Limited	-	JUBI
Kenindia Asset Management Company Limited	-	KENI
Madison Asset Management Ltd.	-	MADI
Old Mutual Asset Managers (Kenya) Ltd	-	OM
Stanbic Investment Management Services (EA) Ltd.	-	SIMS

4.1   Pension Funds Under Registered Fund Managers

Fund Manager	Number of Pension Funds Managed
AIG	68
BISL	140
CFC	31*
COOP	60
GEN	20
ICEA	14
JUBI	56*
KENI	75
MADI	150
OM	6
SIMS	30
Total Pension Funds	650

*These fund managers (CFC and JUBI) did not give any response. The number of pension fund they manage is based on Retirement Benefits Authority (RBA) Quarterly Newsletter released on March 2002 (see appendix VII).

4.2 Number of Security Constituting a Portfolio

This analysis focus on the average number of securities constituting a portfolio of the fund managers. The results are shown below.

Table 2: Number of Securities in a Portfolio

Average Number of Securities	Number of Managers	Percent
1 – 10	3	33%
11 – 20	5	56%
Over 20	1	11%
Total	9	100%

The table above shows that 56% of respondents put 11-20 securities in their portfolio. These managers stated that these are equity portfolios where there are a variety of firms with traded securities. The manager with over 20 securities in the portfolio had also invested in different equity securities.

The 33% with 1 – 10 securities indicated that the investment was mainly in money market securities which are very few in Kenya, largely Treasury bills and bonds. The inclusion of many securities was attributed to the need for diversification of risk.

4.3 Methods Used by Fund Managers to Measure Percent Portfolio Returns

The analysis is focused on investigation of the method(s) used in determination of percent portfolio returns. The methods are classified as internal rate of return (money weighted rate of return), Geometric return (Time Weighted rate of return) and arithmetic returns. The results are tabulated below.

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Table 3: Methods Used by Fund Managers to Measure Percent Portfolio Returns

	Method	Number of Managers	Percent
1.	Internal Rate of Return (I.R.R) (Money Weighted Rate of Return)	4	45
2.	Time Weighted Rate of Return (TWR)	2	22
3.	I.R.R and T.W.R	3	33
	Total	9	100%

The table shows that 45% of respondents use money weighted (IRR) to measure percent portfolio returns. This is because according to managers, the method determines the present value of returns. The 22% who use Geometric or Time Weighted method intimated that this method does not depend on timing of cash flows (returns) and more so, it considers the compounding of returns.

The 33% who use both methods explained that the two methods compliment each other. However they do their reporting using I.R.R. method. No manager used arithmetic returns method because to them, it does not produce accurate returns especially where the returns are highly fluctuating over the investment horizon.

4.4   Frequency of Measuring Percent Portfolio Returns

This involves analysis of frequency of measuring portfolio returns within a given financial year. The frequency was broken down into monthly, quarterly and annually. The analysis also focuses on quarterly and annually, plus monthly and quarterly frequency of assessing the percent return. The analysis is tabulated below with corresponding number of managers measuring returns at each parameter of frequency.

Table 4: Frequency of Measuring Portfolio Returns

Frequency	Number of Managers	Percent
Monthly only	1	11%
Quarterly only	4	45%
Annually only	0	0%
Quarterly and Annually	3	33%
Monthly and Quarterly	1	11%
TOTAL	9	100%

The table indicates that 45% of managers measure portfolio performance (% returns) on quarterly basis. They indicated that this was a legal requirement from RBA. The one manager (11%) who measure percent return on monthly basis gets the average for the three months to report his % quarterly returns to RBA. All respondents measured % return on annual basis for the purpose of internal performance evaluation and reporting to trustees.

4.5   Measures of Risk of Portfolio Returns

The analysis is premised on finding out the number of managers using each method of measuring of portfolio returns. The measures of risk are classified as standard deviation, Beta factor, range and a combination of Beta factor and standard deviation.
The table below indicates the distribution of risk measures among the managers.

Table 5: Measures of Risk of Portfolio Returns

Measure of risk	Number of Managers using the measure	Percent
Standard deviation alone	5	56
Beta factor alone	2	22
Beta factor and standard deviation together	2	22
Total	9	100%

Standard deviation was the most commonly used measure of risk. The reason given by the managers for the prevalent use of standard deviation was that it measures total risk of

portfolio returns which is more realistic since the market porfolio is not fully diversified. There is still elements of unsystematic risk.

Managers also attempt to measure risk before making investment. This is done in order to determine the level of risk a manager is willing to take for each investment/portfolio.

4.6   Benchmarks Used by Fund Managers

This involved seeking information on the types of benchmarks used by managers and establish how many managers use each type of benchmark with which to compare the performance of their portfolio. The benchmarks being analysed include NSE – 20 share index, interest rate on Treasury bills, interest rate on commercial paper and "others". The analysis also seek to establish whether managers use one or more than one benchmarks. The analysis is tabulated below.

Table 6: Benchmarks Used by Fund Managers

	Benchmark	Number of Managers using the Benchmark	%
1.	NSE Index only	0	0
2.	Interest rate on Treasury Bills only	0	0
3.	NSE Index and Interest rate on Treasury bills together only	6	67
4.	NSE index, interest rate on Treasury bills and other benchmarks	3	33
	Total	9	100

Table above indicates that 67% respondents used NSE Index and interest rate on Treasury bills as their Benchmark. Managers said that they used the NSE index to compare the performance of their equity portfolio with the performance of Nairobi Stock Exchange (NSE). They also attributed availability of information on these benchmarks to their prevalent use. The "other" Benchmarks included interest rate on commercial paper; interest rate on fixed deposits, Barclays trust investment services index (BISL), AIG 27 share index, MSCI and JP.

The interest rate on commercial paper is readily available in business journals and newspapers but managers indicated that since commercial papers are not actively traded/used in Kenyan financial markets, using the interest rate on commercial paper as a benchmark may bring some bias. The table below shows the number of benchmarks used by individual managers.

Table 7: Number of Benchmarks Used by Individual Managers

Number of benchmarks	Number of managers using the benchmarks	%
1	0	0
2	6	67
3	1	11
4	1	11
5	1	11
Total	9	100%

From the table above [67%] of managers used only two benchmarks (Nairobi Stock Exchange Index and Interest rate on Treasury Bills).

Two managers (22%) used more than three benchmarks. These managers have constructed their own internal benchmarks for in-house use. These are AIG and BISL. The same managers use external international benchmarks. The use of "internalized" and external benchmarks was attributed to the reasons of low liquidity of the Nairobi stock market, lack of adequate/good sample of companies which constitute the index thus inaccurate index, the fact that the index does not show the realities of economic performance and portfolio returns and with off-shore investments, it is only logical to use external benchmarks representing the economic reality of where the investment is made. Their sentiments is supported by the following comments in a local daily.

"The NSE – 20 index is losing ground among firm managers as a benchmark for measuring the performance of the local equity market. The Kenyan equity market sector continues to be ravaged by a six year bear market owing to poor corporate earnings and fund managers now say the NSE – 20 share index no longer accurately measures the performance of stock market. Already, AIG Global Investment (EA) constructed their proprietory stock indices which they use to track the local equity market. The performance of local and global

investment indices is now a big deal. This is because performance of fund managers is gauged against the investment benchmark they set together with their clients". (E.A Standard, 2002)

4.7 Strength of Relationship Between Familiarity With and Importance of the Performance Measures to the Fund Managers.

The analysis involves determination of the strength of relationship (correlation coefficient) between familiarity with and importance of the performance measures to the fund managers. The analysis is based on "familiarity" and "importance" ranking by the respondents. The average ranking, and standard deviation for each respondent is computed in addition to correlation coefficient. The results of the analysis are shown in the table below.

Table 8: Correlation Analysis

Measure	AIG		BISL		COOP		GEN		ICA		KENI		MADI		OM		SIMS	
	F	I	F	I	F	I	F	I	F	I	F	I	F	I	F	I	F	I
Sharp measure	2	3	3	3	1	3	1	1	2	2	2	2	2	3	1	1	5	4
Jensen measure	2	3	2	2	2	3	1	2	2	2	2	3	3	3	1	2	5	4
Treynor measure	2	3	2	2	1	3	1	3	2	2	2	3	3	3	5	4	5	4
Information ratio measure	2	3	3	4	3	4	1	4	4	4	4	4	5	5	5	4	5	4
Fama net selectivity	4	4	3	4	4	4	1	4	4	4	4	4	5	4	5	4	5	4
Average	2.4	3.2	2.4	2.8	2.2	3.2	1.0	2.8	2.8	2.8	2.8	3.2	3.6	3.6	3.4	3.0	5.0	4.0
Standard deviation	0.8	0.4	.49	.98	1.2	.75	0	1.2	.98	.98	.98	.75	1.2	.98	1.96	1.25	0	0
Correlation Coefficient	1.00		0.99		0.89		0.00		1.00		0.87		1.00		0.98		0.00	

Where: F is Familiarity ranking:

KEY

1   Highly familiar

2   Familiar

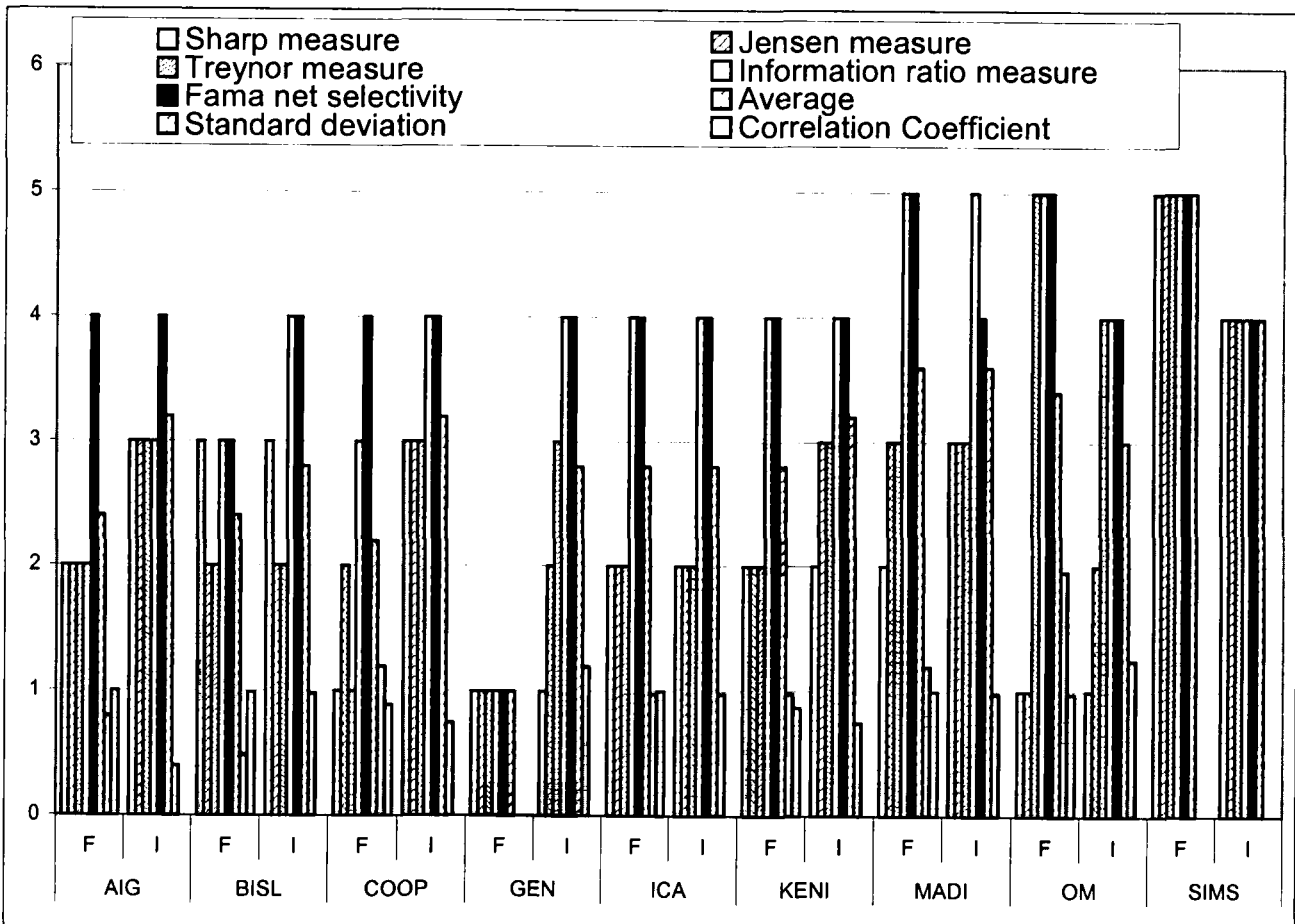3   Somewhat familiar

4   Least familiar

5   Not familiar

6 Not aware

I is Importance of the performance measure to manager.

KEY

1 Very important

2 Important

3 Fairly important

4 Unimportant

5 Totally unimportant

6 Irrelevant

Figure 4.7.1: Correlation Analysis

From the table above, the average level of familiarity for the nine respondents is 2.84. Therefore on average, managers were "somewhat familiar" with the five portfolio performance measures. The average ranking for importance for the nine respondents was 3.2. Generally, the five portfolio performance measures were "fairly important" to the

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managers in evaluation of portfolio performance. The table below indicates the average "familiarity" and "importance" ranking of individual performance measure by all the nine respondents.

Table 9: Average Familiarity and Importance Ranking

Measure	Average familiarity (A.F)	Average importance (A.I)
Sharpe	2.1	2.2
Jensen	2.2	2.7
Traynor	2.6	3.0
Information Ratio	3.6	4.0
Fama Net Selectivity	4.0	4.0

Using a bar graph, this is shown as follows:

Figure 4.7.2: Average Familiarity and Importance Rankings
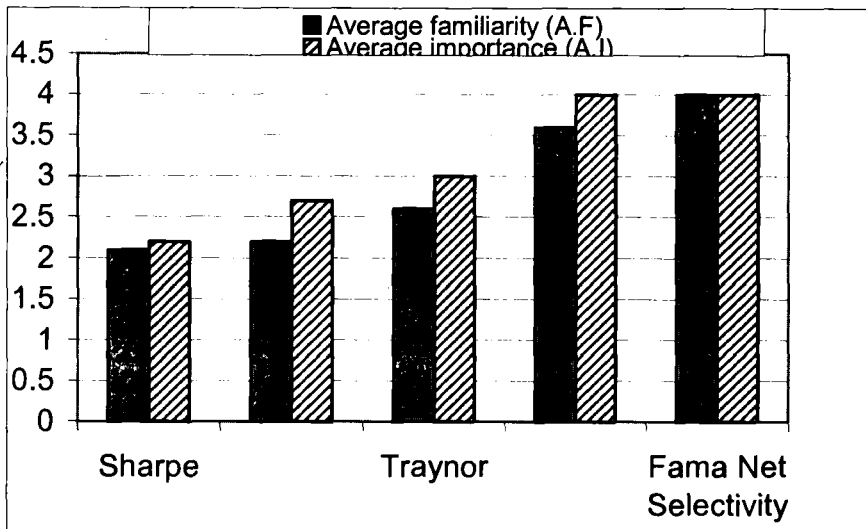
Information ratio and Fama net selectivity were least familiar and unimportant to managers.

On correlation between familiarity and importance three managers (33%) had a perfect positive correlation while two managers out of nine (22%) had a zero correlation. The remaining four managers out of nine (45%) shared a very strong positive correlation between familiarity and importance. The different rating of "importance" of the portfolio performance measures by fund managers was due to accuracy and simplicity of the measures as shown by the formulas, the fact that risk adjusted measures indicate degree of skill and expertise of a manager when investing in the different asset classes which will have

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differing risk attributes, and the manager's personal familiarity with the measures e.g for Sharpe and Jensen measures, managers were on average "familiar".

4.8   Features of an Appropriate Benchmark

The analysis involves the determination of number of managers who ranked the important features of a good benchmark. The basis of ranking was "very important" to "relevant". The features of an appropriate benchmark being ranked on a scale of 1-6 includes unambiguous, measurable, specified in advance, reflective of current situations, appropriate to the manager's investment style and investable. The average ranking was computed to determine the general level of importance (see Appendix V). This is shown in the table below.

Table 10: Features of an Appropriate Benchmark

	Unambiguous		Measurable		Specified in Advance		Reflective of situations		Appropriate investment style		Investable	
Ranked as number	No.	%	No.	%	No.	%	No. of respo-ndents	%	No. of respo-ndents	%	No. of respo-ndents	%
1	5	56	9	100	6	67	4	44	2	22	1	11
2	4	44	0	0	3	33	4	45	1	11	3	33
3	0	0	0	0	0	0	1	11	4	45	4	45
4	0	0	0	0	0	0	0	0	2	22	1	11
Total Respondents	9	100%	9	100%	9	100%	9	100%	9	100%	9	100%
Average Raking	1.44		1.00		1.22		1.67		2.67		2.56	

KEY:

1   Very important

2   Important

3   Fairly important

4   Unimportant

5   Totally important

6   Irrelevant

The table indicates that the most important feature the fund managers would consider in use of benchmark is measurability. All the nine respondents ranked it as number one (very important). The "specification of the benchmark in advance" had an average ranking of 1.22 where 67% of all respondents ranked it as the most important benchmark feature. Respondents said that this is important because:

It helps them to set goals/targets which their portfolios ought to achieve at the end of a given investment horizon. It forms the basis of not only evaluating portfolio performance but also for individual managers performance. The target indicated by the benchmark specified in advance will enable the manager to determine in advance how much risk he can undertake to derive a given rate of return.

The issue of the benchmark being "appropriate to manager's investment style" had the lowest average ranking of 2.67 (fairly important). The respondents said that this was not paramount because the investment style might change according to the dictates of the market and economic performance.

4.9   Challenges Facing Fund Managers in Portfolio Management

This shows the analysis of challenges facing the fund managers in portfolio management. The challenges are ranked on a scale of 1 to 6 with "most challenging" ranked one and "irrelevant" ranked six. The issues being ranked as challenges included valuation of assets, measuring portfolio risk, finding appropriate benchmark, legal restrictions, computing the rate of return, disclosure requirements finding appropriate performance measure and "others" which the respondents indicated themselves (see Appendix IV). The table below indicates the results of the analysis.

Table 11: Challenges Facing Fund Managers

	Valuation of Assets		Measuring Portfolio risk		Appropriate Benchmark		Legal restric-tions		Computing rate of return		Disclosure require-ments		Appropriate perfor-mance measure		Others	
Ranking as No.	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	0	0	4	45	3	33	1	11	2	22	0	0	1	11	1	17
2	2	22	3·	33	2	22	2	22	0	0	3	33	2	22	4	66
3	0	0	2	22	3	33	5	56	2	22	1	11	1	11	1	17
4	1	11	0	0	1	11	1	11	2	22	0	0	1	11	0	0
5	5	56	0	0	0	0	0	0	3	33	4	45	0	0	0	0
6	1	11	0	0	0	0	0	0	0	0	1	11	3	33	0	0
Total Respondent	9	100	9	100	9	100	9	100	9	100	9	100	9	100	9	100
Average Ranking	4.30		1.70		2.20		2.70		3.30		3.9		4.0		2.0	

(Appendix III)

KEY:

1   Most challenging

2   Challenging

3   Fairly challenging

4   Least challenging

5   Not challenging

6   Irrelevant

No. – Number of respondents

The table above shows that the measurement of risk of portfolio returns is the biggest challenge facing fund managers. The average ranking was 1.78. Six managers ranked "other" challenges such as unstable economic environment, lack of common method of computing portfolio rate of return, corporate governance considerations, need for management transparency, political risk and uncertainty, and liquidity of stock market where the NSE- 20 Share Index may not be a good benchmark. The factors were considered to be "challenging" with an average ranking of 2.0 among the six managers. The second most challenging issue was finding appropriate benchmark with average ranking of 2.22.

The least challenging issue was valuation of assets (average ranking of 4.33). This was attributed to the fact that:

(1)   Actuarial firms providing services to Kenyan firms (see Appendix VI) largely do valuation of portfolio assets. Therefore, the valuation is largely outside the function of a fund manager.

(2)   Where Actuarial firms are not involved in valuation, managers just take the market value of the asset e.g. as quoted in the stock exchange.

The use of a good portfolio performance measure was the second least challenging issue in portfolio management. This was due to the fact that the managers were not using the measures in their financial reporting and portfolio management unlike in determination of portfolio percent return which is a legal requirement.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDY

5.1   Summary

The results analysed relates to nine respondents out of a population of eleven respondents (82%). The eleven possible respondents manage six hundred and fifty (650) pension funds. The nine respondents who gave information manage 564 pension funds (86.8%) while the two non-respondents manage 86 pension funds (13.2%). The data analysis was therefore based on nine respondents managing 564 pension funds under management of registered fund managers. The fund managers generally prefer 11-20 securities in a portfolio in order to diversify risk. There seem to be a general consensus that this number of securities will significantly reduce total risk. The respondents do not distinguish between systematic and unsystematic risk but instead measure total risk. There seem to have a high inclination towards the use of internal rate of return (money weighted rate of return) as opposed to the time weighted returns. None of the respondents use arithmetic (simple average) returns to determine percent return of portfolios. All the respondents report on quarterly basis due to legal requirements. The monthly and annual reporting is generally for internal purposes. The risk of the investment portfolios returns is measured well in advance to be pro-active usually using either standard deviation or beta.

There seem to be awareness of and familiarity with portfolio performance measures. However respondents were "somewhat familiar" with information ratio and Fama net selectivity measures. All respondents gathered the information on the performance measures from classroom teaching, textbooks and daily newspaper (including Business Magazines). The respondents generally do not use the portfolio performance measures in evaluating risk and return trade –off of the investment pension fund portfolios. Only one of the nine respondents (11%) uses the Sharpe measure. The respondents have however recognised the importance of the portfolio performance measures in their portfolio management. The "importance" ranking by respondents was largely based on simplicity of the method, familiarity of the respondents with the measure and the fact that risk adjusted measures indicate the degree of skill and expertise of a fund manager when investing in the different

assets classes which will have different risk attributes. The respondents seem to underscore the need for a suitable benchmark against which to measure the performance of a portfolio. All the respondents use Nairobi Stock Exchange (NSE-20 Share) Index as a benchmark. Twenty two percent (22%) of managers use more than three benchmarks because of their diversity in investment with regard to local and international financial markets. The NSE Index is used for equity portfolios while interest rate on treasury bills is used for money market instruments portfolios. The respondents indicate that the most important features of a benchmark are "measurability" and "specification in advance". The appropriateness of the benchmark to the manager's investment style was the least important feature. The most challenging problem in portfolio management in Kenya seem to be measurement of risk of portfolio returns. The respondents also consider exogenous issues such as political risks, corporate governance, economic conditions and need for management transparency to be challenging problems.

5.2   Conclusions

There is need to issue more guidelines associated with portfolio management. In particular there is need to have a common method of computing percent rate of return of investment portfolios.

There is also need to enforce the measurement of riskiness of portfolio returns. The computations of percent return and risk will make it easier for managers to apply the portfolio performance measures in portfolio management. The NSE –20 share Index should be reconstituted to be more reflective of the economic reality otherwise the respondents will construct their internal benchmarks which may be different. If the NSE Index was reliable it could be used as the common benchmark for all fund managers. The other alternative is for the RBA to come up with a common benchmark especially for equity portfolios.

The use of portfolio performance measures in Kenya is wanting. Given the degree of usage in developed countries (as per literature review), there is need to have a developed and efficient capital market which are pre-requisites for the use of the measures in portfolio management. Additionally, institutional legal framework needs to be put in place.

5.3 Limitations of the study

The research was constrained by factors such as data accessibility, underdeveloped capital markets and time resource. On data accessibility, it was difficult to gather all relevant information from respondents. The management of pension funds under RBA is a relatively new concept in Kenya. Some respondents didn't have all the relevant data required for the purpose of the study. Two fund managers did not give any response. In relation to underdeveloped capital markets, most respondents intimated that such a market constrained supply of information. The capital market is inefficient. The depressed economy worsen the situation, in particular, the use of the NSE-20 share index as a benchmark.

Time resource was also constrained especially due to the long time the respondents took with the questionnaire. The time resource did not, however, compromise the quality of data analysis. The monetary cost of preparing the entire research project was also relatively high.

5.4 Suggestions for Further Research Study

The research findings lays foundations for other areas of study. Researchers may engage in research studies associated with risk management styles in portfolio management including immunization strategies. Individuals may also want to know whether Kenyan fund managers practice active or passive portfolio management including analysis of their expertise, skills and investment styles. Individuals may want to find what legal issues are wanting in an attempt to regulate the fund management. A further study may focus on other portfolio or asset management firms in Kenya apart from those managed under R.B.A. The big question is whether the same problems, challenges and the extent of usage of portfolio performance measures are also prevalent with asset management firms not registered under RBA.

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APPENDIX I

Letter of Introduction

Ngene Geoffrey M.
University of Nairobi
Faculty of Commerce
P O Box 30197
NAIROBI

Dear Sir/Madam

I am a master's degree student in the Faculty of Commerce, University of Nairobi. In partial fulfillment of the MBA degree, I am conducting a study on **"Empirical Investigation into Portfolio Performance Measure used by Pension Fund Managers in Kenya and the Challenges they face in Portfolio Management".**

Portfolio performance measures are techniques used to evaluate the performance of portfolios given the risk and return parameters. When compared with an appropriate benchmark, they show whether a portfolio manager has out performed the market or not.

You have been selected to form part of this study. To this end, I kindly request for your assistance in completing the questionnaire.

The information and data required is needed for academic purposes only and will be treated in strict confidence.

A copy of the research project will be made available to your firm on request.

Thank you.

Yours Sincerely

_____

NGENE GEOFFREY M

Questionnaire for Respondents

Name of the firm: _____

Position of respondent in the firm: _____

Academic qualification: _____

Professional Qualification: _____

1.   How many pension funds do you manage?

_____

2.   On average how many investments does each investment portfolio of a pension fund contain?

      1 – 10   ☐

      11 – 20   ☐

      Above 20   ☐

3.   Do you determine the percent return of your investment portfolio?
(Tick as appropriate)

      Yes   ☐

      No   ☐

4.   If your answer in question 3 is yes, which of the following methods of determining percent rate of return do you use? (Tick as appropriate).

      Internal rate of return   ☐

      Geometric or time weighted returns   ☐

      Arithmetic (simple average) returns   ☐

      Others (please specify) _____

5.   How often do you measure percent return of an investment portfolio?

      Monthly   ☐

      Quarterly   ☐

      Semi-annually ☐

      Annually   ☐

6. How do you measure the riskness of the investment portfolio returns? By use of:

Standard deviation ☐

Beta factor ☐

Range ☐

Others (please specify) _____

7. In relation to risk and returns of portfolio, the following method or measures are used to evaluate portfolio performance. Rate your degree of familiarity with each of the portfolio performance measure.

Key
1. Highly Familiar
2. Familiar
3. Somewhat familiar
4. Least familiar
5. Not familiar
6. Not aware

RANK

Measure	1	2	3	4	5	6
Sharpe Measure $\left(\dfrac{\bar{R}_{pi}-\bar{R}_f}{\sigma_{pi}}\right)$	☐	☐	☐	☐	☐	☐
Jensen Measure $\left[R_{pi}-R_f = \alpha_i + \left(\bar{R}_m - \bar{R}_f\right)\beta_{pi} + u_i\right]$	☐	☐	☐	☐	☐	☐
Treynor Measure $\left(\dfrac{\bar{R}_{pi}-\bar{R}_f}{\beta_{pi}}\right)$	☐	☐	☐	☐	☐	☐
Information/Appraisal Ratio $\left(\dfrac{\bar{R}_{pi}-R_b}{\sigma_{ER}}\right)$	☐	☐	☐	☐	☐	☐
Fama Net Selectivity Measure $\left[R_{a-\bar{R}_m}(\sigma_{Ra})\right]$	☐	☐	☐	☐	☐	☐

Explanations

$\bar{R}_{pi}$ = Average % returns of portfolio i during investment period t.

$\bar{R}_f$ = Average % risk Free rate (interest rate on Treasury bills) during investment period t.

σ_{pi} = Standard deviation of returns of portfolio i during investment period t.

β_{pi} = Beta coefficient of portfolio i during investment period t.

α_i = Alpha/Jensen measure of portfolio i.

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σ_{ER}	=	Standard deviation of excess returns $\bar{R}_{pi} - R_b$ during period t.
R_b	=	% returns of a benchmark portfolio against which the performance of portfolio i is being evaluated.
R_a	=	Actual % return of portfolio i being evaluated.
σ_{Ra}	=	Standard deviation (total risk) of actual return of portfolio i.

8. Indicate below the sources of information mentioned in (7) above.

Key
1. Sharpe Measure
2. Treynor Measure
3. Jensen Measure
4. Information Ratio
5. Fama Net Selectivity

	1	2	3	4	5
Classroom teaching	☐	☐	☐	☐	☐
Textbooks	☐	☐	☐	☐	☐
Radio	☐	☐	☐	☐	☐
Consultants	☐	☐	☐	☐	☐
Friends	☐	☐	☐	☐	☐
Daily Newspapers	☐	☐	☐	☐	☐
Seminars	☐	☐	☐	☐	☐

Others (Please specify) _____

9. Do you use any of the measures specified in question 7 to evaluate the investment portfolio performance?

Yes ☐

No ☐

10. If your answer in question 9 above is yes, which measure(s) do you use? (Please specify)

_____

_____

_____

11. Please, indicate how important each of the measures would be, based on your rating:
(Tick as appropriate)

Key:
1. Very important
2. Important
3. Fairly important
4. Unimportant
5. Totally unimportant
6. Irrelevant

	1	2	3	4	5	6
Use of Sharpe Measure	☐	☐	☐	☐	☐	☐
Use of Treynor Measure	☐	☐	☐	☐	☐	☐
Use of Jensen Measure	☐	☐	☐	☐	☐	☐
Use of Information Ratio Measure	☐	☐	☐	☐	☐	☐
Famas Net Selectivity Measure	☐	☐	☐	☐	☐	☐

12. What is your reason for different rating of the above measure? Explain.

_____

_____

_____

13. The performance of an investment portfolio is usually compared with a given benchmark. Which of the following benchmarks do you use? (Tick as appropriate)

Nairobi Stock Exchange Index ☐

Interest Rate on Treasury Bills ☐

Average Interest Rate on Commercial Paper ☐

Others (Please specify) _____

14. In identification and construction of a benchmark, the following factors (characteristics) are important. Please indicate how important each of the factors (characteristics) would be based on your rating. (Tick as appropriate).

Key
1. Very important
2. Important
3. Fairly important
4. Unimportant
5. Totally unimportant
6. Irrelevant

- Unambiguous   ☐ ☐ ☐ ☐ ☐ ☐

- Measurable   ☐ ☐ ☐ ☐ ☐ ☐

- Specified in advance   ☐ ☐ ☐ ☐ ☐ ☐

- Reflective of current investment opinions   ☐ ☐ ☐ ☐ ☐ ☐

- Appropriate to managers investment style   ☐ ☐ ☐ ☐ ☐ ☐

- Investible (forgo active portfolio management and simply hold the benchmark)   ☐ ☐ ☐ ☐ ☐ ☐

15. In management of investment portfolio, the following are problems and challenges faced by portfolio managers. State the extent to which they pose a challenge in pension fund investment management.

Key
1. Most challenging
2. Challenging
3. Fairly challenging
4. Least challenging
5. Not challenging
6. ` Irrelevant

	1	2	3	4	5	6
Valuation of portfolio assets	☐	☐	☐	☐	☐	☐
Measuring risk of portfolio returns	☐	☐	☐	☐	☐	☐
Finding a suitable benchmark	☐	☐	☐	☐	☐	☐
Legal restriction on categories of assets to constitute a portfolio	☐	☐	☐	☐	☐	☐
Determining the rate of return of an investment portfolio	☐	☐	☐	☐	☐	☐
Disclosure requirements in financial Statements	☐	☐	☐	☐	☐	☐
Use of appropriate portfolio performance Measure	☐	☐	☐	☐	☐	☐

Others: (Please specify and rank)

(a)   ☐ ☐ ☐ ☐ ☐ ☐

(b)   ☐ ☐ ☐ ☐ ☐ ☐

(c)   ☐ ☐ ☐ ☐ ☐ ☐

(d)   ☐ ☐ ☐ ☐ ☐ ☐

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APPENDIX III

List of Respondents

PENSION FUND MANAGERS IN KENYA

1. Madison Asset Management Services Ltd.

2. AIC – Global Investment Company (EA) Ltd.

3. Barclays Trust Investment Services Ltd.

4. CFC Financial Services Ltd.

5. Co-operative Bank Trust Investment Services Ltd.

6. Genesis Kenya Investment Management Ltd.

7. ICEA Investment Services Ltd.

8. Kenindia Asset Management Ltd.

9. Old Mutual Asset Managers Kenya Ltd.

10. Stanbic Investment Management Services Ltd.

11. Jubilee Financial Services Ltd.

Appendix IV.

Ranking of Challenges Faced By Fund Managers In Portfolio Management.

Fund manager	Valuation of assets	Measuring portfolio risk	Good benchmark	Legal restrictions	Computing rate of returns	Disclosure requirements	Good portfolio performance measure	Others	
AIG	5	3	4	4	4	5	4	-	
BISL	3	2	3	3	4	2	3	3	
COOP	4	2	1	3	3	5	6	2	
GEN	5	1	2	3	5	3	2	2	
ICEA	5	1	3	2	5	2	6	2	
KENI	6	1	1	3	5	5	6	2	
MADI	2	3	1	1	1	5	6	-	
OM	2	2	2	3	1	2	2	-	
SIMI	5	1	3	2	3	6	1	1	
TOTAL	39	16	20	24	31	35	36	12	
AVERAGE	4.33	1.78	2.22	2.67	3.44	3.89	4.0	2.0	

KEY:
1 Most challenging
2 Challenging
3 Fairly challenging
4 Least challenging
5 Not challenging
6 Irrelevant.

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Appendix v.

Ranking of Features of an Appropriate Benchmark.

Feature	Unambiguous	Measurable	Specified in advance	Reflective of current situations	Appropriate to investment style	Investable.	
AIG	2	1	2	3	3	3	
BISL	1	1	1	2	2	2	
COOP	1	1	1	1	3	2	
GEN	1	1	1	2	4	2	
ICEA	2	1	2	1	4	4	
KENI	1	1	2	2	3	3	
MADI	2	1	1	2	3	3	
OM	2	1	1	1	1	1	
SIMS	1	1	1	1	1	3	
TOTAL	13	9	12	15	24	25	
AVERAGE RANKING	1.44	1.00	1.22	1.67	2.67	2.56	

KEY:
1   Very important
2   Important
3   fairly important
4   Unimportant
4   Totally unimportant
5   Irrelevant.

Appendix VI

List of Actuarial Firms

1. Actuarial and Benefit Consultant ltd.

2. Alastaire G. Mclean FIA

3. Bacon & Woodrow Actuarial and Consultants
.
4. Channel Kenyan ltd.

5. Hymans Robertson Consulting Actuaries

6. Nauman Associates Consulting Actuaries

7. N B C Consultants and actuaries

8. Watson Wott Partners

9. William M. Mecer ltd.

Appendix vii

Statistics of Investment Portfolio of Retirement Benefits Schemes By Managers As At 31st December 2001
422 Schemes, Shillings Millions.

Manger	No. Of schemes	Cash	Deposits	Fixed income	Government securities	Quoted equity	Unquoted equity	Offshore	Immovable property	Guaranteed funds	Other	Total
AIG	62	118.1	1184.0	509.2	6176.1	645.5	0.0	195.9	1137.9	510.7	15.6	10493.0
BISL	121	132.9	1228.2	1056.6	9572.3	2368.1	153.9	2980.0	3.6	0.0	82.4	17578.1
CFC	31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	252.2	0.0	252.2
COOP	49	387.4	409.3	30.4	209.4	181.3	181.3	0.0	241.0	0.0	0.0	1640.6
GEN	23	91.7	358.7	372.6	2725.7	120.3	120.3	9.6	0.0	0.0	138.2	3818.4
ICEA		Not Available.										
JUBI	56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1084.0	0.0	1084.0
KENI	64	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1015.4	0.0	1015.4
MADI		Not Available.										
OM	3	124.5	1846.9	188.3	2890.3	649.3	3.9	0.0	1671.6	0.0	0.0	7374.7
SIMS	13	82.8	108.4	158.5	579.6	126.0	5.0	168.2	219.0	0.0	0.0	1447.5
TOTAL	422	937.4	5135.5	2315.6	22153.5	4090.5	346.1	3353.7	3273.1	2862.3	236.2	447.4.0

Source: Manager quarterly returns submitted to RBA by March 2002 as per RBA Newsletter for March 2002

Categories of Assets to Constitute a Fund Portfolio

	Column 1	Column 2
	Categories of Assets	**Maximum percentage of aggregate market value of total assets of scheme or pooled fund**
1.	Cash and Demand Deposits in institutions licensed under the Bank Act of the Republic of Kenya.	5%
2.	Fixed Deposits, Time Deposits and Certificates of Deposits in institutions licensed under the Banking Act of the republic of Kenya	30%
3.	Commercial Paper, Corporate Bonds, Mortgage Bonds and loan stocks approved by the Capital Markets Authority and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category	15%
4.	Kenya Government Securities and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category.	70%
5.	Preference shares and ordinary shares of companies quoted in a stock exchange in Kenya. Uganda or Tanzania and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category.	70%
6.	Unquoted shares of companies incorporated in Kenya and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category.	5%
7.	Offshore investments in bank deposits, government securities, quoted equities and rated Corporated Bonds and offshore collective investment schemes reflecting these assets.	15%
8.	Immovable property in Kenya and units in property Unit Trust Schemes incorporated in Kenya and collective investment schemes incorporated in Kenya and approved by the Capital Markets Authority reflecting this category.	30%
9.	Guaranteed Funds	100%
10.	Any other assets	5%

Source: RBA Act, Subsidiary Legislation, 2000.