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# An examination of the level of engagement of modern portfolio techniques for portfolio management by real estate firms in Lagos State, Nigeria

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**Abstract.** Portfolio management in real estate practices was examined in this study with a view to ascertaining the techniques engaged in carrying out the risk and return analysis as well as the evaluating portfolio performance in the firm. Questionnaires were administered to respondents from 208 estate surveying and valuation firms in Ikeja, Lagos Island, Ikoyi and Victoria Island, Lagos State. Response rate achieved was 86.5%. Basic descriptive tools of percentage, weighted mean, relative importance index were used to analyse the data. The study found that the number of firms that offer portfolio management services is rather low compared to other areas of services. Results further showed that the firms ranked discounted cashflow and contemporary growth models higher than the modern portfolio techniques for asset return assessment whereas simulation and modern portfolio tools ranked higher among the techniques for risk assessment. Finally, the results showed that most firms make use of contemporary growth models, benchmark, style or market comparison to evaluate the performance of the portfolio. The study therefore suggests that estate firms embark on staff capacity development for effective application of modern portfolio theory techniques and making the service widespread among practicing firms.

**Keywords:** portfolio, real estate, valuation, return, risk, performance, mixed-asset, technique

## 1. Introduction

Real estate investment is capital intensive, time consuming and are often illiquid. The process is filled with intrigues of decision making by different stakeholders. Despite these, real estate has become an attractive investment option for rich individuals and institutional investors. [1] submitted that real estate has been an important portion of wealth for thousands of years and remain a valuable part of any well diversified portfolio in recent times. Besides the prestige and fulfillment that accompany owner-occupied properties, most investors in real estate aim at the monetary gain. Such benefits have been used to justify the inclusion of real estate in a mixed asset portfolio by some investors. These



opportunities as identified in different studies include the ability to offer absolute returns, to hedging against expected and unexpected inflation, provide diversification benefits against financial assets, achieve portfolio stability, provide steady cash inflows as well as offer tax advantages [1][2][3]. In addition to this, real estate asset provides security of income, security of capital, capital appreciation/growth and serve as a good instrument for loan security [4]. Achieving these objectives requires astute portfolio management practices by the investor or the manager. Consequently, portfolio management has become an area of specialization that requires a level of tactical and strategic management skill sets by the manager. Portfolio management is an intricate task that involves dissecting investment potentials of assets, setting goals, selecting assets, allocating resources and most importantly, evaluating the performance of the portfolio with a view to improving or maintaining the return. According to [5] portfolio management is a dynamic decision process whereby investor's list of active new product or development project is constantly updated and revised with the principal goal of maximizing return and minimizing risk.

Portfolio management is a critical and vital senior management challenge which is about evaluating performance and making decisions whether to invest, re-invest or divest from an asset [6][7]. Efficient portfolio management is linked with the astuteness of the manager, his training and development. Due to the complex nature of the practice, the dynamic investment climate as well as the complex quantitative approach to investment analysis in recent times, most investors engage the services of portfolio managers albeit at a cost. However, the investors are able to focus on the core business objectives and achieve optimal return on their various investments. Meanwhile, studies have shown that unlike their counterparts in developed countries who take performance evaluation of investment very seriously, portfolio managers in developing countries have attached less importance to this aspect which is the crux of portfolio management. [4] averred that though locations and sound property management practices are essential to earning the target return, investment decisions in developing countries were often made without recourse to properly evaluating the performance of the asset. Similar findings in previous studies also revealed that while investors in developed countries take performance measurement very seriously, their counterparts in Nigeria attach little consideration to this [8][9][10]. Furthermore, the Property Management Institute [11], putting this problem in context, averred that despite the quantifiable benefits of portfolio management, relatively few organizations have perfected the practice. [12][13] also concurred that the need for a specialist service, the increasing demand for extra skills from managers, and the adoption and adaptation of sophisticated techniques of operation are beginning to gain attention. It is against this background that this study examines the portfolio management practices in estate surveying and valuation firms in Lagos State, Nigeria.

## **2. Literature Review**

### *2.1. Portfolio management concept*

Portfolio management in simplest term is the task undertaken to earn the best possible return on a portfolio. A portfolio is a collection of assets held by an individual or institution. According to [14], portfolio investments are usually a varied bundle of investments ranging from cash, fixed interest securities (bonds), variable interest securities (equities) and real property. Thus portfolio management involves constructing portfolios and then making them evolve in order to reach the return objectives defined by the investor while respecting the investor's constraint in terms of risks and asset allocation [15]. Activities undertaken to select among alternative investments, allocate resources with the goal of earning maximum return whilst minimizing risk is referred to as portfolio management. Explaining it further, [6][7] described portfolio management as a dynamic decision process whereby the list of active new products (and development) projects are constantly revised and updated. Expounding the concept, [15][16] defined it as an integrated set of steps undertaken in a consistent manner to create and maintain an appropriate portfolio (combination of assets) to meet clients' stated goals. A robust portfolio that meets client's risk and return objective is formed by taking the three basic steps of planning, execution and feedback. Embedded in these steps are the various tasks required to attain a vibrant portfolio. These activities as highlighted by [15][16] include:

- identifying and specifying investment objective and constraints
- developing investment strategies
- deciding portfolio composition
- initiating portfolio decisions by the portfolio managers
- measuring and evaluating portfolio performance
- monitoring the investment and market conditions
- implementing necessary rebalancing of the portfolio

### *2.2. Portfolio management approach*

Due to the peculiarities of assets that make up a portfolio and the changing investment climate, the portfolio management approach has continued to evolve with time. According to [15] the breakdown of assets into major asset categories corresponds to management specialization and the classification provides a reference for particular performance analysis methods. For instance, [17] recalled that in the past when property investments were with little risk and the economy was buoyant and stable, investor's decisions were based on intuition, judgment and experience. However, with the rising level of risk and uncertainties in the economy, coupled with the complexities of the investment scene, this approach have become rather obsolete and grossly wanting. The traditional method of investment analysis was rampant until the middle of 19<sup>th</sup> century when the contemporary/quantitative approach to investment management emerged. [15] averred that quantitative investment techniques are now among the most widely used fund management methods. The authors further showed that this approach which has its origin in modern portfolio theory is generally grouped into active investment management and passive investment management.

Providing insight to the dichotomy of portfolio management approach, scholars including [18;19] [20;21]; [22]; [17] identified the 'micro' perspective otherwise referred to as the 'traditional or passive management style' and 'macro' perspective also referred to as the 'contemporary or active management style'. [23] further revealed that decision-making via passive management approach is characterized by conventional wisdom and intuition and devoid of serious/in-depth quantitative analysis. The 'micro' or 'passive' management approach entails the measurement, appraisal and improvement of performance of individual or portfolio of assets [23]. The latter approach to portfolio management is highly quantitative biased and have witnessed the development of a number of complex mathematical models for portfolio performance analysis. Passive portfolio management is an equity management style where portfolio is selected as agreed and no additional activities takes place unless the client preference changes or there is a change in the risk and return of the market portfolio [24]. The author further posited that active portfolio management on the other hand is a frequent action of the portfolio manager in an attempt to beat the average market performance and find mis-priced securities where he can quickly make gains to meet portfolio benchmark. Corroborating this assertion, [15] averred passive investment management consists of tracking the market without attempting to anticipate its evolution while active investment strategies involves developing strategies to take advantage of temporary market inefficiencies.

### *2.3 Portfolio performance evaluation techniques*

The assessment of portfolio management skills is in three folds, viz; performance measurement, performance attribution and performance appraisal [15][24]. Performance measurement involves the calculation of portfolio's rate of return. Performance attribution examines why the portfolio performed as it did and involves determining the sources of a portfolio's performance. Performance appraisal is the evaluation of whether the manager is doing a good job based on how the portfolio did relative to a benchmark [15][23]. Performance measurement, the bottom line of investment process is an important aspect of interest to all rational investor and portfolio managers. Portfolio performance evaluation involves measuring the realized return and differential risk of the portfolio against the portfolio objectives or a benchmark and identifying any constraints to optimal return on investment [25]. [4] observed that the recent involvement of institutional investors in real investment underscores the need

for real estate investment performance measurement. Performance measurement according to [26] is a mathematical means of assessing the effectiveness of an investment decision. Moreover, while performance measurement quantifies the achievement of the investment relative to targets and objectives, performance analysis involves the subsequent scrutiny and analysis of the results achieved, thereby providing reasons for good performance and drawing appropriate conclusions for the purpose of correcting lapses, planning future strategies and taking decisions for better future performance [27]. Portfolio evaluation is needed for assessing how available funds have been utilized to achieve maximum return, evaluate the performance of portfolio managers and evaluate the performance of mutual funds vis-a-vis other investment opportunities that provide attractive returns with average risk tolerance level [24]. Organizations are increasingly recognizing that portfolio management can help them make the decisions that will set them apart from their competitors [11]. Portfolio performance evaluation techniques identified in literatures are classified as follows. (i) Conventional methods e.g. benchmark comparison, style comparison and market comparison [24][28][29] (ii) Contemporary growth models e.g. income yield on cost, income yield on value, capital appreciation, income appreciation, rental growth, reversionary potential [27][14] (iii) time-weighted rate of return (TWRR), money-weighted rate of return (MWRR), capital-weighted rate of return (CWRR) [27][14] and (iv) risk adjusted methods e.g. sharpe ratio, Treynor ratio, Jensen alpha, Modigliani and Modigliani and Treynor squared [28][14][24][29][16].

#### *2.4 Portfolio risk and return*

The purpose of investment appraisal is to assess the economic prospect of a proposed investment by identifying the embedded risks and evaluating the impact on potential return of the investment (Savvides, 1994). Risk and return are vital elements of investment and are of paramount interest to every investor. Risk emanates from uncertainties that surround investment variables while return are derived from income accruals or change in the value of investment. Prior to the current practices, risk assessment was intuitively conducted for each asset in a subjective and qualitative manner. [16], observed that in the early 1960s, the investment community talked about risk, but there was no specific measure for the term. However, the modern portfolio theory introduced certain specific risk and return measures, thereby facilitating evaluation process to be carried out in a more objective and quantitative manner. Modern portfolio theory was introduced in 1952 by Harry Markowitz and suggests that investors base their asset allocation decisions on the risk-return characteristics and co-movement of the asset returns [31][32][33]. The theory did not only explain how asset returns behave in a basket of investment, but also shows how to assess asset risk against portfolio risk and the overall market risk. [22][35][16] and [36] have variously defined risks in investment as “total risk”, having both systematic and unsystematic component. [16] defined systematic risk as the portion of individual asset’s total variance that is attributable to the variability of the total market portfolio while unsystematic risk is the portion of individual asset’s total variance that is unrelated to the market portfolio but due to the asset’s unique features. The risk that is caused by general market influences is the market risk and also known as systematic or non-diversifiable risk while the risk that is associated with specific asset and can be diminished by diversification is called unsystematic or diversifiable risk [34].

In the same vein, [37] defined total return of any investment as composed of two parts, the income return component and appreciation (growth) return component. The study further explained that the income return is the net amount of cashflow paid out to the investor during the period while appreciation return is the capital value of the asset during the period of investment. The techniques for evaluating investment return as found in literatures are categorized as follows: (i) traditional or non-discounted cashflow approach, e.g. payback period, accounting rate of return, (ii) discounted cashflow techniques e.g. Net present value, net terminal value, internal rate of return, profitability index, (iii) growth models, e.g. income appreciation, rental growth, capital appreciation and (iv) modern portfolio theory tools of holding period return, arithmetic mean return, geometric mean return, time and money-weighted rate of returns [34][38][39] [29] and [14]. In the same vein, the tools for measuring risk are also categorized as follows: (i) economy state models e.g. laplace, maxi-maxi, maxi-mini criteria [40], (ii) risk-adjusted methods e.g. sharpe ratio, Treynor ratio, etc. [41] (iii) simulation e.g.

sensitivity/scenario analysis, monte-carlo simulation and (iv) modern portfolio tools of expected value, variance, standard deviation, coefficient of variation, covariance, correlation coefficient, coefficient of determination [34][4][27][24] and [16].

### 3. Research Methods

The research design adopted for this study is survey research design with structured close-ended questionnaires used as the principal instrument of data collection. The population of respondents is the 343 estate surveying and valuation firms in Lagos State as contained in the 2016 Directory of the Nigeria Institution of Estate Surveyors and Valuers. However, four locations were selected for questionnaire administration based on the large concentration of firms. Thus the sample frame comprised the 79 firms in Ikeja, 14 firms in Ikoyi, 81 firms in Lagos Island and 34 firms in Victoria Island, making a total of 208 firms. Since the distribution of these is in tens across the four locations, the total number was adopted as the sample size. Hence, a total of 208 questionnaires were administered to respondents from these firms in the capacity of principal partner, branch manager, head of department or investment and development director in the firm. Overall, a total of 180 questionnaires were retrieved which constituted 86.5% rate of response. In order to compare the response on the methods of risk-return analysis and portfolio performance evaluation techniques, a 5-Point Likert scale ranging from very high (5) to nil (1) was used to weigh respondent's preference. To determine the ranking of the weighted response in order of importance or significance, the relative importance index was computed. In the calculation of the relative importance index (RII), the following formula was used:  $RII = \sum W/A * N$  : where W represents the weight attached to each response variable; A represents highest weight integer which in this case is 5 and N is the total number of respondents. Further analysis of response on the level of usage of the return risk assessment methods and performance evaluation techniques was completed with frequency tables and percentages. Bar charts were used to compliment the result presentation and discussion where necessary.

### 4. Data analysis and discussion

#### 4.1 Response rate analysis

The administration of questionnaires to real estate firms practicing within the selected locations is presented in Table 1.

Table 1: Questionnaire Administration

Questionnaires	Ikeja	Ikoyi	Lagos Island	Victoria Island	Total
No. Administered	79	14	81	34	208
No. Retrieved	65	12	72	31	180
Percentage	82.3%	85.7%	88.9%	91.2%	86.5%

Overall a total of 86.5% of the total questionnaires administered were retrieved. This was used for subsequent analysis.

#### 4.2 Scope of real estate services

Amongst the areas enquired about is the scope of services that the firms surveyed render to their clients. Analysis of response in this regards is presented in Table 2.

Table 2: Scope of services of estate firms

Scope of real estate services	Frequency	Percentage
Property management	180	100%
Project management	71	39.4%
Auctioneering	38	21.1%
Facilities management	125	69.4%
Property development	63	35.0%
Feasibility study	122	67.8%
Valuation	180	100%
Agency (sales & leases)	180	100%
Portfolio management	77	42.8%

Table 2 shows the scope of real estate services offered in the firms of estate surveying and valuation firms. The Table shows that only 42.8% of the 180 firms surveyed offer portfolio management services. This figure is quite low compared to other aspects of the profession like property management, facilities management, agency and valuation service offered in all the firms. The response rate that is below average indicates that majority of the firms are indisposed to providing portfolio management services. The results in Table 2 show the composition of portfolio of different institutional investors and clients to the respondent firms. It was observed that all the respondents indicated that many of these firms have other assets in addition to land and buildings. All the firms have large cap real estate in their portfolio, while 24.7% indicated the presence of small cap real asset, 53.3% indicated that common stocks constitute part of their portfolio, 59.7% revealed that fixed income securities is one of the asset class in the portfolio while 41.6% also indicated that their client invest in short term securities.

#### 4.3 Composition of the investment portfolio

In order to identify the assets that make up the portfolio of clients of the estate firms, respondents were requested to identify the class of assets being managed for their investors.

Table 3: Assets composition of institutional investor's portfolio

Class of asset	No. of investor	percentage
Short term securities e.g. treasury bills, commercial paper	32	41.6%
Fixed income securities e.g. fixed deposit, preferred stock, bond	46	59.7%
Common stock/shares	41	53.3%
Speculative assets e.g. option, futures	-	-
Illiquid assets e.g. stamp, arts, coins	-	-
Small cap real assets e.g. reits	19	24.7%
Large cap real assets e.g. land, building	77	100%

This analysis points to the fact that majority of the firms manage a multi-asset or mixed-asset portfolio in their respective firms. However, it was also observed that none of the respondents indicated any illiquid or speculative assets as constituent of the portfolio. Although the number of assets in the portfolio of the firm is not immediately clear, the analysis revealed that portfolio of 40.3% of the respondents firm contain large cap real assets alone.

#### 4.4 Portfolio risk and return assessment techniques

Portfolio management as earlier established in literature involves risk and return assessment. The preference for modern portfolio theory tools among other means of return-risk and performance evaluation techniques by estate surveyors and valuers were assessed on a 5-Point Likert scale of very high (5), high (4), moderate (3), low (2), nil (1). The weighted mean and relative importance index were calculated and ranked accordingly. Presented in the Table 4 is the relative importance index and ranking of the different measures of risk and return as well as the performance evaluation techniques. Table 3 shows the importance index and rank of the measures of return and risk as well as the portfolio performance evaluation techniques as indicated by the respondents. The Table revealed that though, the modern portfolio theory based techniques are being adopted and used in the assessment of asset return, risk analysis as well as performance evaluation, the techniques still fall short of being the first choice among respondents in these firms. Discounted cash flow ranked 1<sup>st</sup> among the measures of return, followed by the contemporary growth models while traditional/non-discounted cashflow and modern portfolio theory techniques ranked 3<sup>rd</sup> each.

However, in the estimation of risk, respondents found simulation and modern portfolio theory techniques more favourable ranking 1<sup>st</sup> and 2<sup>nd</sup> respectively on the scale of preference. In the area of portfolio performance evaluation, the conventional methods and contemporary growth models are

preferred as they rank 1<sup>st</sup> and 2<sup>nd</sup> respectively while the weighted rate of returns and modern portfolio theory based techniques ranked 3<sup>rd</sup> and 4<sup>th</sup>. Arising from the foregoing, it is perceived that the use of modern portfolio theory techniques in portfolio management practices among estate firms in Lagos State, Nigeria is still evolving and being blended with other methods to achieve the purpose. The partial preference accorded the techniques for assessing risk, return and performance evaluation might not be unconnected to the level of understanding of the modern portfolio theory in this clime by the respondents, level of development of the markets, (primary, secondary and tertiary markets), unaffordability of expert skill or sheer policy statement.

Table 4: Return, risk and performance evaluation techniques

Measures of return	Total	Mean	RII	Rank
Non-discounted cash flow methods	275	3.571	0.714	3 <sup>rd</sup>
Discounted cashflow methods	317	4.117	0.823	1 <sup>st</sup>
Contemporary growth models	206	2.675	0.535	2 <sup>nd</sup>
Modern portfolio theory techniques	206	2.675	0.535	3 <sup>rd</sup>
Measures of risk				
State of economy models	155	2.013	0.402	4 <sup>th</sup>
Risk-adjusted discount rate	244	3.169	0.634	3 <sup>rd</sup>
Simulation e.g. sensitivity analysis	313	4.065	0.813	1 <sup>st</sup>
Modern portfolio theory techniques	293	3.805	0.761	2 <sup>nd</sup>
Performance evaluation techniques				
Conventional methods	303	3.935	0.787	1 <sup>st</sup>
Contemporary growth models	263	3.416	0.683	2 <sup>nd</sup>
Weighted rate of returns	205	2.662	0.532	3 <sup>rd</sup>
MPT risk adjusted methods	188	2.442	0.488	4 <sup>th</sup>

Presented in figures 1, 2 and 3 are the level of use (in percentage) of the various techniques by respondent firms that offer portfolio management services. Respondents indicated multiple choice for various techniques under each classification of measures of risk and return as well as the performance evaluation techniques.

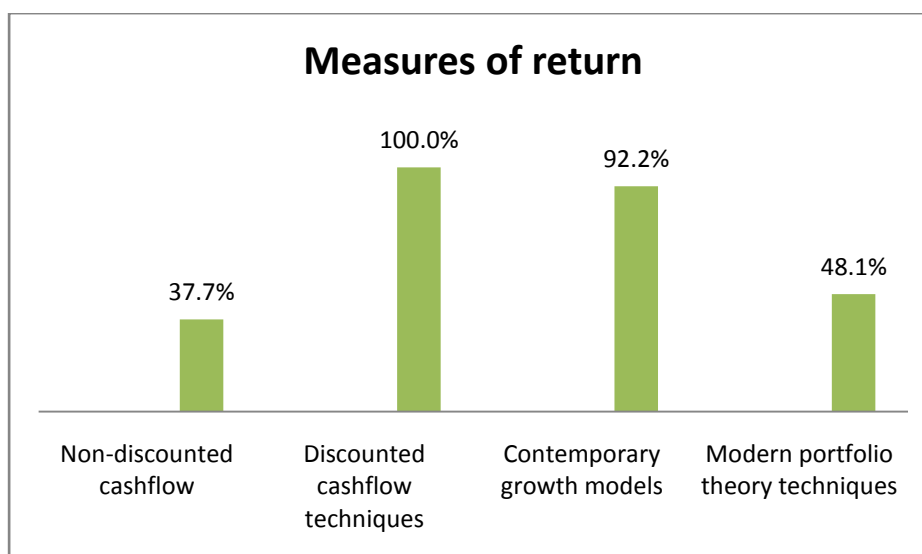


Figure 1: Measures of investment return



Figure 1 showed that the discounted cashflow techniques are engaged by all the respondent firms. This is closely followed by the contemporary growth models such as income return, capital return, rental growth, value appreciation. The modern portfolio techniques of return assessment are used by 48.1% of the firms while the non-discounted cashflow came last with 37.7% of all firms indicating its usage. This invariably implies that these firms assess return on investment by means of assorted techniques available for the purpose, however, majority rely more on the discounted cashflow and contemporary growth models. This may also indicate the character or components of the mixed asset portfolio, whether homogenous or heterogeneous.

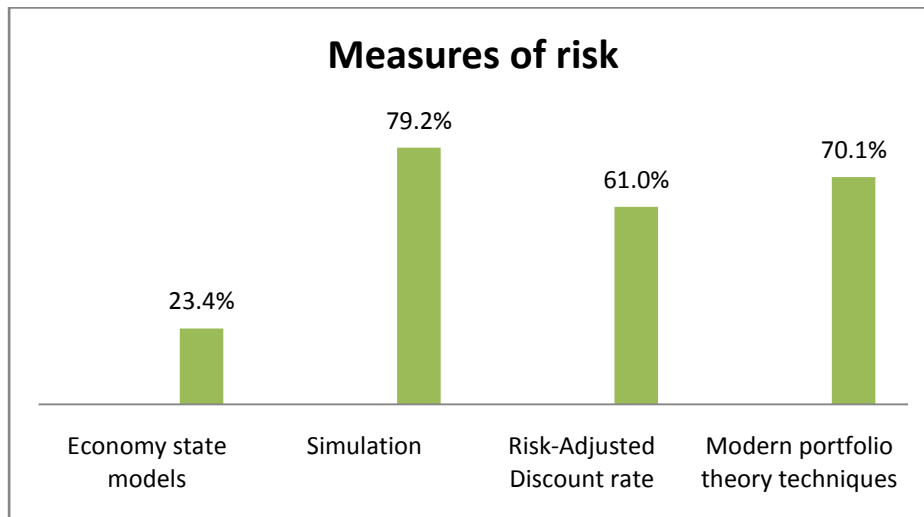


Figure 2: Measures of risk

Figure 2 presents the measures of risk available to portfolio managers and it is observed that the duo of simulation models which include sensitivity analysis, scenario analysis and monte-carlo simulation as well as the techniques of modern portfolio theory such as the expected value, variance, standard variation and coefficients of variance and correlation are engaged by majority of the respondent firms as indicated by the 79.2% and 70.1% respectively. The risk-adjusted discount rate also shows high level of usage with 61.0%. This invariably implied that the respondents estate firms blend the varieties of risk assessment techniques including the modern portfolio theory tools to achieve maximum precision in their estimation of risk of assets or the portfolio.

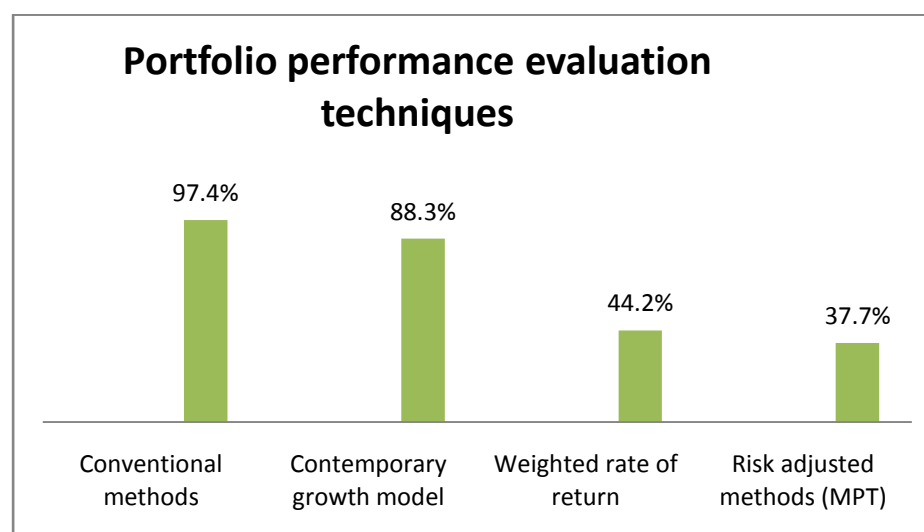


Figure 3: Portfolio performance evaluation techniques

Figure 3 shows that majority of respondent firms still make use of conventional performance evaluation methods such as benchmark comparison, style comparison or market comparison. Moreover, the contemporary growth models such as income appreciation, capital growth, value appreciation, rental growth remain very popular among the respondent firms with 88.3% of response indicating the usage. The below average response for the risk adjusted methods, Sharpe ratio, Treynor ratio, Jensen alpha points to the fact that these techniques are yet to enjoy popular usage possibly due to the level of complexity, level of understanding or the peculiarities of investment climate in this part of the world.

## 5. Conclusion and recommendations

The practice of real estate profession was examined in this study with respect to an important aspect of the practice which is portfolio management. Portfolio management is different from property management in many areas. First, it involves managing more than one asset for an investor client. Second, portfolio management process goes beyond routine management and rent collection to evaluating the performance of the property in terms of income appreciation over the period of investment. Moreover, critical analytical tools are engaged in portfolio management for risk analysis, return assessment and performance evaluation. This study has been able to establish that the respondent firms actually practice portfolio management with the varieties of asset mix contained in their respective portfolio. Moreover, the analysis also showed that technical tools are engaged in the risk and return measurements as well as performance evaluation to the best of their ability. However, it was observed that the modern portfolio theory is still being engaged albeit with caution as analysis shows below average level of usage in the aspect of return assessment and performance evaluation. The study therefore suggested that estate firms need to train their staff or engage trained personnel in this regards so as to fully harness the potentials of modern portfolio theory techniques in all aspects of portfolio management. The recommendation of the study will hasten the achievement of three of the sustainable development goals by 2030. These are goals #4, #8 and #17. It will facilitate inclusive and equitable quality education and provide life-long learning opportunities for all. It will also promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Finally, it will strengthen the means of implementation and revitalize global partnership for sustainable development.

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