



## **Investment Options Contribution and Shareholders Wealth Maximization: A Review of the Portfolio Theory**

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### **ABSTRACT**

This study was conducted on the effect of investment options contribution to shareholders wealth maximization. The study was informed with the idea that the portfolio theory was proposed to influence risk adverse investors to diversify their risk through portfolio management. However the portfolio theory is based on profit maximization and provides no real value analysis on the income generation potentials of the investment options rather than risk. The objective of this study was to create awareness on this concept and help investors to make investment decisions on financial assets by considering both risk and income potentials of investment options in a portfolio. The study collected data from 20 registered firms in the Nigerian stock exchange for a period of five years. A questionnaire was design to collect primary data on the effect of investment options to shareholders wealth and the efficiency of the portfolio theory. The study used the statistical package for social sciences (SPSS) to analyse the data with descriptive statistics, ordinary least square, correlation coefficient and Durbin-Watson. The findings from the results of the test of hypotheses revealed that the application of the knowledge of investment option contribution to shareholders wealth maximization will improve the efficiency of the portfolio theory by assisting investors to select feasible portfolios and portfolio content. The study recommended that investment analysts, stock brokers and other agencies should provide information for investors on investment option contributions to shareholders wealth.

**Keywords:** Shareholders Wealth, Investment option, Contribution, Portfolio, Theory.

### **1. INTRODUCTION**

Management Information System ensures that the numerical figures generated through the financial and non-financial transactions of a firm corresponds to reality – of the property, financial and profit status and the economic value of an enterprise so represented by the financial statements, (Zsuzsanna 2012). All such information is measured on monetary value. Money is the main undertone of all human activities especially that of corporate entities (Oyadonghan and Gbalam, 2013).

Management information produces different reports, such as the financial statements, budgets, management reports, audit reports and analysis of financial statement reports. These reports give information on the financial position of an enterprise, level of business operations, income accrued from investments in a year, the position of assets and liabilities, prospects and challenges, cash flows and capital projections and rationalizations into the future.

Shareholders uses such information to guide them in making investment decisions based on the different investment options in the capital market. However, a miss-informed investment decision will lead to poor growth rate in shareholders wealth, while a well informed decision will lead to a high growth rate in shareholders wealth.

The concern for efficiency constitutes a central motive in economic studies. It is widely acknowledged that the fundamental economic problem of any society is the efficient allocation of scarce resources provided by investors among alternative uses and users, (Gravelle and Rees 1992, Novak 2008). The uses are the investment options available to the shareholders at different times in the capital and money markets. So the challenge is to find a pattern of allocation that eliminates waste, and establish a most efficient and optimal allocation of these scarce resources in the economy, (Novak, 2008).

The allocation of the resources of an economy lies in the interplay of the forces of demand and supply, this in turn is determined by the Capital Market which is a body of institutions, structures and mechanisms whereby medium and long-term loans and corporate financial assets are pooled and made available to businesses, governments and individuals corporate. It transfers financial instruments which are already outstanding from among those who have a higher propensity to save to those who have entrepreneur knowledge to manage the fund to provide goods and services to satisfy human needs.

However, shareholders do face the risk of investment failure, and when such happens the capital market will suffer for it. To avoid this problem the port-folio theory of investment becomes very relevant. Investment baskets do not guarantee a risk free option, which led to the need to determine the contribution of each investment option to shareholders wealth in the capital market (Chandra, 2012).

Since information is relevant to shareholders on what to invest, it is also relevant for them to know the contributions of each of the investments in their port-folio. This lack of knowledge has led to the problems of investors' wrong entry and exit into and out of an investment option in the capital market. The acute inability to estimate and determine their tolerable level of risk acceptability and continuation in business is as a result of this lack of knowledge.

This problem of investors' lack of knowledge on individual contribution of investment options to shareholders wealth accounts for poor port-folio formation and management. The reason being that port-folio management is merely based on investment risk on return, and void of the contribution margin of each investment option to the growth of the shareholders wealth in the capital market.

This study is designed to bridge this knowledge gap that is existing in the literature of investment options and the capital market with regard to shareholders wealth maximization in Nigeria.

The main purpose of this study is to determine the value of information on investment options contribution to shareholders wealth in making investment decisions. This main purpose can be achieved with the help of the following objectives which are to:

1. Ascertain the contributions of this concept to the efficiency of the port-folio theory in making investors decisions in the capital market;
2. Ascertain whether the contributions of each investment option have an effect on shareholders wealth in the capital market.
3. Ascertain whether shareholders are conscientiously aware of this concept in making decisions of their port-folios.

## 2.1 Theoretical/Conceptual Frame Work

### *Portfolio theory*

Portfolio management involves two tasks. The first is to analyze the securities which are focused on the risk of investment assets and return. The second is to select the optimal portfolio to minimize the risk and maximize return from among all other feasible portfolio (Chandra 2012).

This theory as proposed by Marko Witz (1950) was the first formal attempt to quantify the risk of a portfolio and develop a methodology for determining the optimal portfolio. Before this theory, investors depend on return and risk factors in making decisions but without any scientific analysis to guide their decisions. The saying that, do not put all your eggs in one basket was the common slogan for portfolio options. If return on securities do not move in perfect lock steps, diversification of investment options will help to reduce the total risk of a cumulative investment portfolio.(Chandra 2012). So in technical terms, diversification reduces risk if returns are not perfectly positively correlated. The relationship between diversification and risk is that in a mix of investment options, with different risk levels and all of them are neither increasing or decreasing at the same time, it is possible that the rate of reduction in the risk co-efficient of some options will undue the increasing

risk co-efficient of other options. His phenomenon will provide a net risk valued that its average risk will be less than actual risk of the most versatile investment option in the investment basket.

This is graphically demonstrates as in figure 2.1

Risk and portfolio values

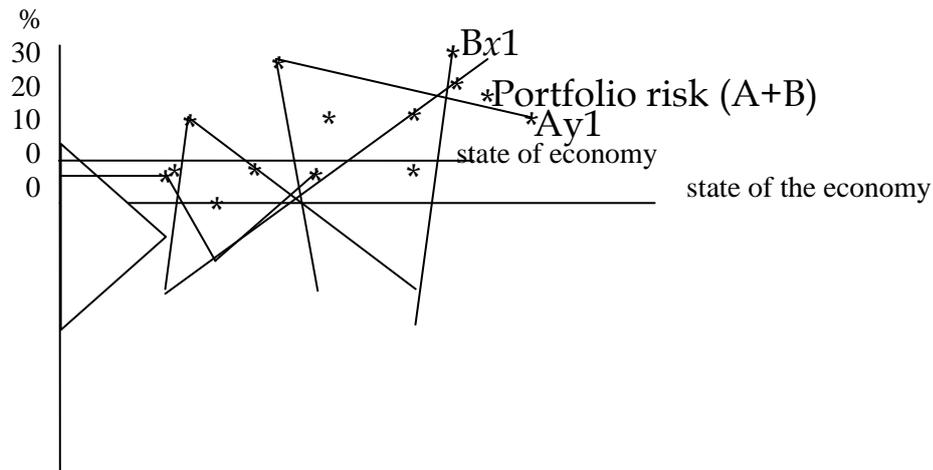


Figure 2.1 portfolio risk diversification (adapted from Chandra 2012)

Given that the average risk of options B is  $x_1$  and that of option A is  $y_1$ , then the total average risk of the portfolio is given as  $x_1 y_1$  which is less than  $x_1$  and greater than  $y_1$ . The implication is that if more investment options are added to a portfolio, the average risk of the portfolio decreases. Hence the average risk is given as

Risk

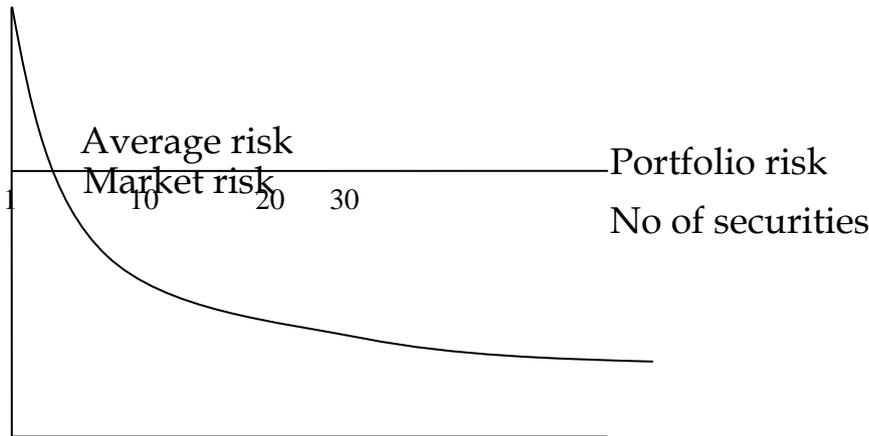


Figure 2.2 a falling portfolio risk (adapted from Chandra 2012)

Investors generally hold a portfolio of securities. So, while individual returns and risks are important, a portfolio theorist considers the return and risk of the portfolio. The area of interest in this study is considering the contribution of the individual securities in a portfolio to shareholders wealth by borrowing the contribution margin concept from management accounting. Again a portfolio return is computed in aggregate of return by the weighted average of the expected returns on the individual securities in a portfolio. This approach neglects a common factor in investment. Investment and investment options are volatile and dynamic. An investor decision on an option can change at any time given several factors as provided by Chandra (2012). In case an investor wishes to drop an option or security in a portfolio, what should be a determining factor, should it be the individual return, or risk; or the portfolio return or risk? An individual return does not provide its net contribution to shareholders wealth due to investment cost which can be considered to be variable and directly linked with volume of investment and constant at unit price. So reducing it to its contribution

level will provide a clear picture of its value contribution to shareholders wealth. This fact is omitted in the theory of portfolio management.

A negative covariance among the securities in a portfolio is usually accepted except the covariance is negatively positive. But if both are positively positive, an investor will want to adjust its portfolio options then the contribution margin of each portfolio to an investor's wealth becomes very important and relevant. Another problem that had led to the neglect of the contribution of each option is that portfolio theory promotes the equality of risk to rate of return. This approach makes investors to ignore real income and consider the risk factor as a rate of return. It is believed that high risk option attracts a high rate of returns but in most situations this approach does not work. Hence it is rational and conservative to consider real income contribution in making choices of investment options in a portfolio (Ross et-al 2001). To illustrate, the high return in the petroleum industry is not 50% informed by risk but more than 60% informed by high turnover per litre due to need and lack of close substitute. Modern portfolio theory is an investment theory based on the idea that risk adverse investors can construct portfolio to optimize and maximize expected return base on a given level of market risk emphasizing that risk is an inherent part of higher reward. It claimed that the risk in a portfolio of diverse stocks will be less than the risk inherent in holding any one of the individual stocks.

### **2.2.1 Shareholders Wealth Maximization**

Wealth maximization is a universal accepted objective in business. According to this objective managers should take decisions that will maximize the shareholder's wealth. It is to make the shareholders as rich as possible in business decision. Shareholders wealth is maximize when a decision generates the net worth of a business. So a decision that has a positive net present value creates wealth for the shareholders. So, stock price or investment assets value maximization is equal to shareholders wealth maximization. Hence shareholders wealth maximization is the attempt by managers to maximize the wealth of the firm they run, which result in rising stock prices that increases the net worth of shareholders. A firms manager or staff do not profit (aside from their salaries and benefits) from the company's growth unless they own stock in the company. Many companies offer employee stock purchase plans to encourage employees to benefit from the shareholders wealth maximization through their hard work (Chandra 2012).

Shareholders wealth maximization differs from profit maximization. Profit maximization does not take into account the protection of the company and its owners from risk. Hence a risk friendly policy is based on profit maximization and not shareholders wealth maximization. The spirit behind the portfolio theory is to encourage risk friendliness and discourage risk adverse investment approach in business. For example, many big banks such as Oceanic and intercontinental seek profit maximization by investing on complex and highly risky options like the oil business and forex that turn out to be toxic investment ventures, resulting in drastic reduction in stock prices and eventual corporate failure which wealth maximization option would have prevented (New York institute of finance 2016). This is why shareholders wealth maximization implied that immediate operations of a firm are and should be to maximize return on equity capital.

### **2.2.2 Investment instruments and options**

Instruments traded in the stock market can be divided into:

1. Fixed Income Securities: Incomes derived from such securities are fixed and almost certain to the investors irrespective of the fortunes of the issuer. Such securities include:
  - a. Bonds: these include
    - I. Unsecured bonds which are normally called Debentures
    - II. Bonds secured by real property are known as mortgage bonds
  2. Variable Income Securities
    - a. Equities
    - b. Preference shares-Combines features of Equities and Bonds
    - c. Derivative Securities

Equity Instruments

Equity instruments are also called ordinary shares or common stock or variable income securities. They are the perpetual capital of companies. Holders have claims upon the residual profits of a company. The holders also possess limited liability i.e. a shareholder is not liable for the debts of the company beyond the amount of capital contributed unless the shareholder owes the company some unpaid subscription on the shares. Equity holders' rank last in the distribution of the company's assets in the event of bankruptcy or liquidation. They are the most important elements of corporate equity and are far more numerous in the capital structure of companies. Holders have rights to vote at meeting.

#### Capital Market Instruments

The capital market presents a lot of option to both corporate and individual savers who want to invest in small and large scale businesses. The instrument commonly used in the market include shares and stocks (both common and preferences), corporate bonds, federal government bonds, state and local government bonds as well as government agency securities for example government parastatals. .

The following are the most important classes of securities in the Nigerian capital market.

- 1) Gilt Edged: These are government securities purchased and held by investors to cover loans raised by government. They are so-called because the repayment of both the principal amount and the accrued interest is fully guaranteed by the Government. They are therefore not subject to speculation. Example of this type is of securities are the Federal Government Development Stocks, Government Savings Bonds, the Treasury Bills and the Treasury Certificates.
- 2) Stocks and Shares: These are stocks and shares issued by corporate bodies such as companies. They carry dividends rights in favour of the holder although the exercise of such right is subject to the availability profits. There are mainly preference and ordinary shares. While preference shareholders receive fixed rates of dividends, ordinary shareholders do not, but they have the right of the ownership of the enterprises.
- 3) Company Debentures and Loans Stocks: They are loan certificates issued by corporate bodies to their customers. They carry fixed interest rates and are redeemable at specified period. They can be issued irredeemable or redeemable at the option of the company.

Capital instruments can also be divided into:

#### Fixed Income Securities

Incomes derived from such securities are fixed and almost certain to the investors irrespective of the fortunes of the issuer e.g. bonds. Unsecured bonds are normally called Debentures

Bonds secured by real property are known as mortgage-bonds

- Mortgage-Backed Securities
- Asset-Backed Securities

Variable Income Securities such as equities, preference shares - Combines features of equities and bonds

#### Derivative Securities

#### Equity Instruments

Also called ordinary shares or common stock, or variable income securities. This is the perpetual capital of companies, holders have claims upon the residual profits of a company they also possess limited liability. A shareholder is not liable for the debts of the company beyond the amount of capital contributed. Unless the shareholder owes the company some unpaid subscription on the shares. Equity holders' rank last in the distribution of the company's assets in the event of bankruptcy or liquidation. They are the most important element of corporate equity and are far more numerous in the capital structure of companies. Holders have rights to vote at meetings.

There are two sources of return to ordinary share investors: dividend and capital gains.

Instead of (and sometimes in addition to) cash dividends, investors are paid stock dividends which translates to more shares. An investor derives the following benefits:

1. Participate in the fortunes of the company through dividends which forms part of the company's income.
2. Growth in portfolio through bonus shares - extra shares fully paid out of reserves which are distributed to existing shareholders
3. Growth in portfolio through capital appreciation i.e. as market prices of equities increases
4. Right to attend and vote at shareholders meetings

5. Use of share certificate as collateral for borrowings
6. The feeling of satisfaction in contributing to business and economic growth
7. Equity investments enable people to save with ease. Such savings are automatically put to work for their owners
8. A void the adverse effect of inflation on savings as equities over a long period of time produce compound yields that exceed the rate of inflation

#### Bonds

A bond is a security (similar to IOU) issued in connection with a borrowing arrangement which obligates the issuer to make specific payments (coupon payments) to the holder over a period of time usually semi-annually).

Bonds generally fall under:

1. Corporate Bonds / Debenture.
2. Government Bonds
3. State Government Bonds
4. Local Government Bonds
5. Municipal Bonds/Notes
6. Agency Bonds

Corporate Bonds / Debenture: an obligation secured by the general credit or earnings capacity of the issuer rather than being backed by a specific lien or property.

Mortgage Bonds/ Notes: secured by a lien on property, equipment or other real assets. Mini-Coupon and Zero-Coupon Bonds

- Callable on Callable Bonds
- Bearer Bonds
- Book-Entry/Bonds
- General Obligation Bonds
- Revenue Bonds

Par Value:

- Amount paid to the stockholder on maturity of the bond.
- Discount or premium

Coupon Interest: Annual/Semi-annual Naira interest paid to the bondholder

Maturity Date: The date on which the issuer is obligated to pay the bondholder

Sinking Fund: Periodical application of money towards redemption of the bonds before maturity.

Referred Stocks: These are non-voting shares in a company, usually being paid with a fixed stream of dividends. Popularly known as Preference shares, they have features similar to both equity and bonds. They promise to pay a specified stream of dividends each year. Unlike Bonds, failure to pay the promised dividend does not result in corporate bankruptcy. Instead dividends are accumulated for a future year but ordinary share holders do not receive any dividends until the preferred stockholders have been paid in full. On liquidation, they rank after bondholders but before ordinary shareholders.

Reason for investing in bonds could be;

1. Investors seeking steady cash flow
2. Investors who do not have an immediate need for the sum invested
3. Bonds are excellent vehicle applicable in portfolio diversification

Reasons why bonds are preferred to equities are;

They are loans repayable over a relatively long period of time, hence frees the issuer from short term funding problems thereby permitting long term capital investment. His interest charge paid by the issuing firm is deducted as an expense from profits before the computation of corporate taxes (tax deductible). Interest on bonds is typically paid semi-annually while equity holders are risk bearers. In the extreme case of liquidation, bondholders are creditors; hence have a claim ahead of equity holders.

Derivative Securities

Available in most economies but intensity differs. They are esoteric instruments (i.e they are likely to be enjoyed by few people with a special knowledge or interest). Derivatives are instruments that

derive their values from an underlying security (stock, bond or basket of securities). Derivatives market does not trade in the basic securities, but on the right to title on the underlying securities on the basis of the future title to the securities. They are available on both financial and real assets. The financial futures market operates to provide a hedge against exchange and interest rates fluctuations.

Derivatives include futures and options.

Financial futures represent a firm's legal commitment between a buyer and a seller, where they agree to exchange something at a specified price at the end of a designated time.

Futures are available on baskets of stocks (Stock Index) and are referred to as Stock Index Futures. Futures on Fixed income securities are called interest rate futures. Option is a contract in which the writer of the option grants the buyer of the option the right to purchase from or sell to the writer a designated instrument at a specified price (or receive a cash settlement) within a specified period of time.

Real Estate

One can participate in real estate as a creditor or an owner. Direct participation is afforded by the direct acquisition of mortgages or the indirect purchase of mortgage-backed securities. Real estate pools that are similar to unit trust are called Real Estate Investments Trusts (REITs). They are available for diversified debt and equity ownership in pools of property of various types.

Mortgage-Backed Securities

Bond backed by mortgages is called mortgage-backed securities. They are usually issued by banks to large institutional investors and by the government and by large mortgage companies. The underlying collateral is a pool of mortgages. Investors receive payments from the interest and principal on the underlying mortgages

Asset-Backed Securities

These are securities issued by a special purpose company that holds a package of low-risk assets whose cash flows are sufficient to service the bonds. Hence, instead of borrowing money directly, Companies sometimes bundle up a group of assets and then sell the cash flows from these assets. It is these securities that are known as asset-backed securities. Various assets are used as collateral

International Equities

- Foreign stocks are attractive because many international companies oblige investors with superior return potential
- Foreign stocks offer diversification possibilities

Foreign stocks can be acquired directly at foreign stock exchanges by purchasing Global \Depository Receipts (GDR) or by acquiring international unit trust or mutual funds.

### 2.3. Empirical Review

Several scholars had carried out research on investment and capital market, others had evaluated the behavioral aspect of investment decisions and their social-economic implication. The researcher is going to conduct a review of most of such available and associated studies with the intent of establishing a lure or a basis for the need for this work.

Pat and James (2010), said the capital market has been identified as an institution that contributes to the socio-economic growth and development of emerging and developed economies. This is made possible through some vital roles played, such as channeling resources, promoting reforms to modernize the financial sectors, financial intermediation capacity to link deficit to surplus sector of the economy, and a veritable tool in the mobilization and allocation of savings among competitive uses which are critical to the growth and efficiency of the economy.

Dechow et al. (1996) took a sample of 92 firms subjected to investment income information during the period 1982-1992, and subsequently found an important motivation to investment as being the desire to attract returns at low costs. Thus, it can be concluded that earnings from investments is a motivator.

Novak (2008) looks at the importance of information for stock market efficiency. The study compared the relevance of Book value of equity earnings and book-to-market equity ratios to the capital market and portfolio selection. The result was that information on investment income is important to portfolio selection in the capital market, but challenges are, that most investors are relying on information provided by investment analysts based on risk.

### 3. MATERIALS AND METHODS

This study is based on establishing the relevance of investment option contribution to shareholders wealth in the capital market. Since each group of the variables is made of up of several institutions and persons, a survey design was adopted for the study (Etuk 2003; Gupta & Gupta 2011). The researchers deemed it fit to adopt an exploratory survey design. Based on the analysis of Gupta and Gupta (2011), an exploratory study “is best characterized by its lack of structure and flexibility. It is diagnostic and generally used for the development (and testing) of hypothesis regarding potential problems and opportunities” This type of research provides insight and understanding to a problem; it uses secondary data, expert opinions, surveys and in-dept-discussions and observations and attempts to be conclusive. The population of this study is grouped into two. Group A is made up of companies from whose financial statements information about the value of investment options and contributions to shareholders wealth was gathered. In this group as at October, 2015 a total of 194 Nigerian companies were listed in the stock market which makes the population of the study, (NSEC 2015). For group B investors in the stock market, since the researchers find it difficult to approach all the shareholders in the capital market, those agencies that trade on behalf of them were used as the second group in the population. According to the 2015 annual financial report of the Nigerian Security and Exchange commission and the 2015 fact book, such agencies, active in the trading floor, as stock broking firms, totaled 232. A sample of 20 companies and 20 dealer firms were used for the study based on judgmental and non statistical sampling technique.

Primary data was collected with a questionnaire and secondary data was collected from the Nigeria stock market on financial asset prices of the 20 companies for a period of five years on a quarterly basis with the help of Cash Craft Limited, Yenagoa branch and the data for the regressions were extracted from the Annual financial reports of the 20 companies for a period of five years from the 2011 to 2015 fact books of the NSE, and individual companies published annual reports on line. The questions are both closed and open ended. Using the modified likert 4 point scale as provided by Asuka, (2011), the responses are graded as 4 = very great effect, 3= great effect, 2= considerable effect, 1= no effect, and 0= undecided. Copies of the questionnaire were distributed by hand to dealer agencies in Port-Harcourt and Yenagoa, to each dealer with five copies of the questionnaire. A total of one hundred and (100) copies were distributed, out of which sixty (60) copies were retrieved representing 60% of total copies of the questionnaire distributed.

Multiple regression technique of ordinary least square (OLS) was used to estimate the models and test the hypotheses. The ordinary least square is used to estimate the models because it exhibits the characteristics of the best linear unbiased estimator. Asterious and Hall (2007), Wooldridge (2006) documented that the OLS regression analysis is simple, unbiased and shows the direction of cause/effect between the dependent and independent variable(s) using the Statistical package for Social Sciences (SPSS) software.

Research Hypotheses and Model Specification.

With a study of more than one hypothesis, several statistical models were constructed to test the different hypothesis. This is being done with each research hypothesis having its own unique model and design.

#### Hypothesis 1

The concept of investment option contribution to shareholders wealth does not significantly affect the efficiency of the port-folio theory in the capital market.

OLS – Independent variable = contribution of investment options (CIO)

Dependent variable = Port-folio theory (PFT)

Model:  $PFT = f(CIO) \dots 1$

$PFT = a + \beta_1 CIO + e \dots 2$

The a priori expectation of the model

$\partial PFT / \partial CIO > 0$ .

#### Hypothesis 2

The contribution of each investment option does not significantly affect shareholders wealth in the Nigerian capital market?

Independent variable = Investment options {Ordinary share capital (OSC), Preference share capital (PSC), Debentures (DBT), Real Estates (RES),

OLS – Dependent variable – Shareholders wealth (SHW)

Model:  $SHW = f(OSC + PSC + DBT + ) \dots 1$

$$SHW = a + \beta_1 OSC + \beta_2 PSC + \beta_3 DBT + e \dots 2$$

The a priori expectation of the model

$$\partial OSC / \partial SHW > 0; \partial PSC / \partial SHW > 0; \partial DBT / \partial SHW > 0.$$

### Hypothesis 3

Shareholders do not significantly apply this knowledge of investment option contribution margin in deciding on their port-folio formation in the Nigerian capital market.

OLS – Independent variable – Contribution of Investment options (CIO)

OLS – Dependent variable – Decision on Investment options (DIO)

Model:  $DIO = f(CIO) \dots 1$

$$DIO = a + \beta_1 CIO + e \dots 2$$

The a priori expectation of the model

$$\partial DIO / \partial CIO > 0.$$

### Measurement of Variables

The variable of the three hypotheses are:

1. **Shareholder Wealth:** This is measured by shareholders equity in the company's statement of financial position. However equity includes ordinary share capital and share premium but includes all reserves and retain earnings. (SHW)
2. **Portfolio Theory Efficiency:** This is an abstract phenomenon, so it was measure with a questionnaire which was distributed to 20 stock broken firms in Yenagoa and Port Harcourt (PFT)
3. **Decision About Investment on Investment Option (DIO):** This is an abstract variable. It measure the decision making process of investors as they are received to have been influenced by the knowledge of the contribution of each investment income to shareholders (investors) wealth.

**Contribution of Investment Option (CIO):** This is made up of quantitative prices extracted from the financial statement of the selected firms.

- i. **Ordinary Share Capital:** This is an investment option. It come based on dividend received and receivable as investment income was used.
- ii. **Preference Share Capital (PSC):** Preference shares attract interest income. A firm's investment income on preference share (as interest) was collected from the financial statements of the selected firms.
- iii. **Debenture Bond (DBT):** Debenture is a bond, as an investment option, it attracts interest income. So this interest was collected from the financial statements of the selected firms
- iv. **Real Estate (RES):** This is an investment option as though not too prominent in the Nigerian capital market. Its net income from sales made by companies as in their income statements is collected for this study.

Since the study is a combination of primary and secondary data, all the values of both primary and secondary data were converted to percentages to put them in a common denomination.

### 4. DATA ANALYSIS, RESULTS AND INTERPRETATIONS

The result in appendix B table 4 presents the data used for analyzing and testing the hypotheses of the study. The table contains the different proxies for the independent (contribution of investment options), the moderating variable (decision making) and the dependent (shareholders wealth) variables for the study.

**Table 4.1 Descriptive Statistics on contribution of investment options, shareholders wealth and portfolio theory**

|                        | N         | Minimum   | Maximum   | Mean      | Std. Deviation | Skewness  |            | Kurtosis  |            |
|------------------------|-----------|-----------|-----------|-----------|----------------|-----------|------------|-----------|------------|
|                        | Statistic | Statistic | Statistic | Statistic | Statistic      | Statistic | Std. Error | Statistic | Std. Error |
| OSC                    | 60        | .84       | 434.05    | 35.2109   | 62.94364       | 4.787     | .309       | 27.953    | .608       |
| PSC                    | 60        | .00       | 74.00     | 21.5567   | 25.95213       | 1.034     | .309       | -.427     | .608       |
| DBT                    | 60        | .00       | 72.87     | 21.3410   | 22.38809       | .922      | .309       | -.446     | .608       |
| CIO                    | 60        | .00       | 77.90     | 20.8837   | 24.05727       | 1.051     | .309       | -.274     | .608       |
| DIO                    | 60        | .00       | 74.10     | 20.1115   | 25.59537       | 1.169     | .309       | -.190     | .608       |
| PFT                    | 60        | .00       | 72.90     | 20.0367   | 22.17993       | .940      | .309       | -.411     | .608       |
| SHW                    | 60        | 86        | 461.03    | 1.0021    | 65.32002       | 4.875     | .309       | 31.33q    | .608       |
| Valid N<br>(list wise) | 60        |           |           |           |                |           |            |           |            |

From table 4.1 above, the average amount of the rate of change in the variables for the 5 years period covered by the study 35, 2109 for ordinary share capital (OSC), 21, 5567 for preference share (PSC), 21, 3410 debenture (DBT). While contribution from investment option (CIO), Decisions based on contribution of investment options (DIO), Portfolio theory (PFT), Shareholders wealth (SHW), ranges from 20.88, 20.11, 20.03, and 41.00 respectively. The variance between the mean values of the variables shows a close common factor of progressive increase. The growth rates of the values of the variables ranges from 434.05 to 84 by OSC and SHW; while the rest variables fall within 74 to 00. Ordinary share capital (OSC) and Shareholders wealth have the highest standard deviations. This suggests that they are the most volatile or dynamic variables in the model. Showing that they have a great dispersion from their mean values. While the rest of the variables appears to be more clustered with the mean values.

Except for portfolio theory (PFT) which is less than 1, all other variables are positively skewed. This means that within the 5 years of this study, the growth rate of the variables are skewed to the right towards normality because their means is lesser than their standard deviations.

**4.2 Data Analysis**

**Hypothesis one:** The concept of investment option contribution to shareholders wealth does not significantly affect the efficiency of the portfolio theory in the capital market.

**Table 4.2 Test of Correlation investment option contribution and efficiency of portfolio theory**

|                     |     | cio   | Pft   |  |  |
|---------------------|-----|-------|-------|--|--|
| Pearson Correlation | cio | 1.000 | .660  |  |  |
|                     | pft | .660  | 1.000 |  |  |
|                     | cio |       | .000  |  |  |
|                     | pft | .000  |       |  |  |
| Sig. (1-tailed)     | cio |       | .000  |  |  |
|                     | pft | .000  |       |  |  |

From table 4.2 above, the correlation between contribution of investment options (CIO) and Portfolio theory (PFT) is 0.660 and a probability of 0.000. This is a strong and positive relationship.

**Table 4.3 Contribution of investment options and portfolio theory**

|   | $\beta$ | SE    | sig   | t       |
|---|---------|-------|-------|---------|
| Contribution of investment option (CIO) | 0.912   | 0.043 | 0.000 | 21.416  |
| R <sup>2</sup>                          | -       |       |       | 0.944   |
| Adjusted R <sup>2</sup>                 | -       |       |       | 0.939   |
| 'F' Stat                                | -       |       |       | 229.942 |
| Prob 'F' Stat                           | -       |       |       | 0.000   |
| Durban Watson                           | -       |       |       | 2.357   |

The result in table 4.3 above shows that contribution of investment options has a 0.912 effect on the efficiency of the portfolio theory when making decisions on investment. The implication is investment option contribution has 91% effect on the magnitude of success on any portfolio selection in the capital market.

This result agrees with the apriori expectation of the model.

$\delta CIO/\delta PFT > 0$  significant.

Test of Regression Analysis.

The R square for the explanatory variable contribution of investment option to the dependent variable of efficiency in portfolio selection in the capital market is 0.944 and the adjusted R-Squared is 0.939, the independent variable accounts for 93.9% of the pattern of investment option selection in a portfolio decision making process in the Nigerian capital market. Other variables not identified accounted for 6.1% which includes risk, and investor's disposition.

With the probability of "F" stat of 0.000 which is less than 0.05 confirmed that investment option contribution to shareholders wealth significantly affect the efficiency of the portfolio theory in the capital market.

Durban-Watson: A Durbin-Watson of 2.357 is a significant proof that the model is free from auto-correlation or first order serial correlation. This shows that the R-square and the adjusted R-square are not over estimated and the ( $\beta$ ) coefficient factors of the explanatory variable was not underestimated either (Koutsoyianis 2001). So the result of the model can be used for policy analysis on the relationship of the regressor and the regressant variable.

"F". stat test: The results also shows the "F" stat test at 229.94 with a probability of 0.000 and mean square of the regression variables at 9117.839 while the omitted variables takes 39.653 indicating a significant F. stat value.

**Hypothesis two:** The contribution of each investment option does not significantly affect shareholders wealth in the Nigerian capital market?

**Table 4.4 Correlation between investment options and shareholders wealth**

|                     |     | shw   | osc   | psc   | dbt   | res   |
|---------------------|-----|-------|-------|-------|-------|-------|
| Pearson Correlation | shw | 1.000 | .119  | .223  | -.089 | -.001 |
|                     | osc | .119  | 1.000 | .643  | -.060 | -.179 |
|                     | psc | .223  | .643  | 1.000 | -.221 | -.315 |
|                     | dbt | -.089 | -.060 | -.221 | 1.000 | .344  |
|                     | res | -.001 | -.179 | -.315 | .344  | 1.000 |
| Sig. (1-tailed)     | shw | .     | .182  | .043  | .249  | .497  |
|                     | osc | .182  | .     | .000  | .326  | .086  |
|                     | psc | .043  | .000  | .     | .045  | .007  |
|                     | dbt | .249  | .326  | .045  | .     | .004  |
|                     | res | .497  | .086  | .007  | .004  | .     |
| N                   | shw | 60    | 60    | 60    | 60    | 60    |
|                     | osc | 60    | 60    | 60    | 60    | 60    |
|                     | psc | 60    | 60    | 60    | 60    | 60    |
|                     | dbt | 60    | 60    | 60    | 60    | 60    |
|                     | res | 60    | 60    | 60    | 60    | 60    |

From table 4.4 above, the correlation between:

Shareholders wealth (Shw) and ordinary share capital (osc) is 0.223 at a probability of 0.043, which is positive and that means that ordinary share capital as an investment option has a strong effect on shareholders wealth maximization.

Shareholders wealth (Shw) and preference share capital (psc) is 0.119 at a probability of 0.182. This too is a positive correlation.

Shareholders wealth (Shw) and debenture bond (dbt) is -0.089 at a probability of 0.249. It is a negative and weak relationship.

Shareholders wealth (Shw) and real estate (res) is -0.001 at a probability of 0.497. Again this relationship is both negative and weak. The only explanatory variable having a positive and strong effect on shareholders wealth is ordinary share capital. Preference share as an investment option also has a positive but weak relation with shareholders wealth. Meaning that only the relationship between shareholders wealth and ordinary share capital is significant at a probability of 0.043 that is less than 0.05 all others are above 0.05.

**Table 4.5 Shareholders wealth and investment options**

|                          | $\beta$ | SE    | sig   | t      |
|--------------------------|---------|-------|-------|--------|
| Ordinary share capital   | 0.626   | 0.427 | 0.049 | 1.465  |
| Preference share capital | -0.102  | 0.483 | 0.834 | -0.211 |
| debenture                | -0.174  | 0.365 | 0.636 | -0.476 |
| Real estates             | 0.390   | 0.350 | 0.498 | 0.682  |
| Adjusted R <sup>2</sup>  |         |       |       | -0.008 |
| 'F' stat                 |         |       |       | 0.882  |
| Prob 'F'                 |         |       |       | 0.481  |
| Durban watson            |         |       |       | 1.686  |
| R <sup>2</sup>           |         |       |       | 0.060  |

From the test of coefficients as indicated in table 4.5, ordinary share capital (OSC) has 62% effect on any positive changes in the behavior of shareholders wealth in the capital market. A 62% of the magnitude of a positive change in shareholders wealth is caused by ordinary share capital. However, this relationship of cause and effect is significant and positive with a probability of 0.049 and a t value of 1.465.

Preference share capital has 10% effect in any negative change on the behaviour of shareholders wealth in the capital market. 10% of the magnitude of every fall in shareholders wealth is caused by investing in low interest rate preference capital in making investment decisions. This result is not significant and weak with a probability of 0.834 and a t value of -0.211.

Debenture bond (dbt) has a 17% effect in any negative change on the behaviour of shareholders wealth in the capital market. 17% of the magnitude of every fall in shareholders wealth in the capital market is caused by investments in low interest rate bonds. This result is not significant and weak at a probability of 0.498 and a t value of -0.476.

Real estate (res) has a 4% effect in any positive change on the behavior of shareholders wealth in the capital market. This is because investment income from this option is real, bulk and highly profit oriented. Since these options are not taken often in a year, its contribution to an increase in shareholders wealth is insignificant at a probability of 0.498 and a t value of 0.682 but positive.

The a priori status of this relationship is:

$\delta OSC/\delta SHW > 0$  (significant),  $\delta PSC/\delta SHW < 0$  (not significant)

$\delta DBT/\delta SHW < 0$  (not significant),  $\delta RES/\delta SHW > 0$  (not significant)

#### R-square Test Result

The model explains only 6% of the behavior of shareholders wealth in the Nigerian capital market and the Adjusted R-square of -0.008 meaning a -0.8% influence on shareholders wealth in the Nigerian capital market. On a strong term, it means that contribution of investment options do not significantly affect the shareholders wealth maximization. The reason is that shareholders wealth is influenced by many factors other than just the investment income from the options but largely from the trading activities of a firm. Income from other investments in the capital market only contributes 6% to the total shareholders wealth (as equity less OSC) among the firms studied. However for portfolio formation, ordinary share capital is significant.

Durbin-Watson test; A Durbin Watson of 1.686 is a prove that there is no serial correlation.

The 'F' stat of 0.882 at a probability of 0.48 negates the overall fitness of the model. Therefore the null hypothesis is accepted that contribution of income from investment options does not significantly affect the behaviour of shareholders wealth in the Nigerian capital market.

**Hypotesis three:** Shareholders do not significantly apply this knowledge of investment option contribution margin in deciding on their portfolio formation in the Nigerian capital market.

**Table 4.6 Correlation between contribution of investment option knowledge and portfolio selection decisions in the capital market.**

|                     |     | dio   | osc   | psc   | dbt   | Res   |
|---------------------|-----|-------|-------|-------|-------|-------|
| Pearson Correlation | Dio | 1.000 | .078  | -.099 | .081  | -.176 |
|                     | Osc | .078  | 1.000 | .643  | -.060 | -.179 |
|                     | Psc | -.099 | .643  | 1.000 | -.221 | -.315 |
|                     | Dbt | .081  | -.060 | -.221 | 1.000 | .344  |
|                     | Res | -.176 | -.179 | -.315 | .344  | 1.000 |
| Sig. (1-tailed)     | Dio | .     | .276  | .225  | .270  | .089  |
|                     | Osc | .276  | .     | .000  | .326  | .086  |
|                     | Psc | .225  | .000  | .     | .045  | .007  |
|                     | Dbt | .270  | .326  | .045  | .     | .004  |
|                     | Res | .089  | .086  | .007  | .004  | .     |
| N                   | Dio | 60    | 60    | 60    | 60    | 60    |
|                     | Osc | 60    | 60    | 60    | 60    | 60    |
|                     | Psc | 60    | 60    | 60    | 60    | 60    |
|                     | Dbt | 60    | 60    | 60    | 60    | 60    |
|                     | Res | 60    | 60    | 60    | 60    | 60    |

From table 4.6 above the correlation analysis shows the relationship between:

Decision on investment option (dio) and ordinary share capital (osc) contribution at 0.078 with a probability of 0.276. This relation is positive with an insignificant effect.

Decision on investment option (dio) and preference share capital (psc) at - 0.099 with probability of 0.225. The correlation between these two variables is negative and insignificant.

Decision on investment option (dio) and debenture bond (dbt) at 0.081 with probability of 0.270. There is also a positive relationship between decision on investment option (dio) and debenture bond (dbt) is weak and insignificant also.

Decision on investment option (dio) and real estate (res) at - 0.176 with probability of 0.089.

**Table 4.7 effect of investment option contribution knowledge in making investment decisions**

|                         | $\beta$ | SE    | sig   | t        |       |
|-------------------------|---------|-------|-------|----------|-------|
| osc                     | -0.117  | 0.066 | 0.080 | -0.1.782 |       |
| psc                     | 0.105   | 0.074 | 0.162 | 1.417    |       |
| dbt                     | 0.049   | 0.056 | 0.386 | 0.873    |       |
| res                     | -0.104  | 0.054 | 0.057 | -1.946   |       |
| R <sup>2</sup>          |         |       |       |          | 0.107 |
| Adjusted R <sup>2</sup> |         |       |       |          | 0.043 |
| 'F' Stat                |         |       |       |          | 1.656 |
| Prob 'F' Stat           |         |       |       |          | 0.173 |
| Durban Watson           |         |       |       |          | 2.138 |

Test of coefficient on the effect of investment option contribution knowledge in making investment decisions

Ordinary share capital (osc) has 11% in any negative change or fall on investment decisions in ordinary share capital in the Nigerian Capital market.

Preference share contribution has a 10.5% effect on any positive change or improvement in making investment decisions of selecting preference share capital in a portfolio in the capitalization.

Debenture bond contribution (dbt) has a 5% effect on any positive change or improvement on its selection in a portfolio in the capital market.

Real estate contribution to shareholders wealth account for 10.40% on decisions affecting its selection in a portfolio. However this result is not significant at a probability of 0.057 and negates the a priori expectation of the model.

**R<sup>2</sup> test:** The R-square of the model is 0.107 and the adjusted R-square is given at 0.043 meaning that the explanatory variables account for 43% of the behavior of investors selection of an option in a portfolio in the capital market, the rest 57% is by variables excluded. The significance of the change is given at 0.173.

The Durbin-Watson test of existence of first order auto-correlation is 2.138 which show that there is no first order auto-correlation. The results of the R<sup>2</sup> adjusted, the "F" stat, and the "t" statistics are neither under estimated nor-over estimated. Such result can be used to forecast a future relationship between the regresor and regresant.

The "F" stat in the model is 1.656 with a probability of 0.173 which is less than 3.65. The mean square of the total regression of the model is 155.83 which is greater than the mean square of the residual variables to the dependent variable of 94.11. With the "F" stat, the null hypothesis is accepted.

#### 4.3 DISCUSSION OF FINDINGS

Hypothesis one the overall result shows that the concept of investment option contribution has a positive and significant effect on the efficiency of portfolio selection. Hypothesis two The overall results shows that investment options do not significantly contribute to shareholders wealth which is based on retained earnings from operating activities of a firm. Hypothesis three. The analysis of the results indicates a negative correlation between the knowledge of investment option contribution to shareholders wealth and using that knowledge in selecting investment options in a portfolio. The result shows that investors ae not making use of that knowledge in portfolio selection in the capital market.

## 5. CONCLUSIONS

The aim of this study is to establish the fact that considering the contribution of each investment option in a portfolio to shareholders wealth creation will improve the theory of portfolio management and formation. The study concluded that the application of this knowledge in portfolio selection will reduce investment problems of feasible options in the capital market.

This study also concluded that Real Estates contribute positively to shareholders wealth; however it is not significant because the business of real estate is not matured to the extent of its being relevant in the capital market in Nigeria. Again this study also concluded that the major contributor to shareholders wealth is the retain earnings from normal business operations. However the little contribution from income from other investments should not be over looked. This will otherwise discourage parent –subsidiary relationships in the corporate world.

## 6. RECOMMENDATIONS

From the findings and conclusions obtained from this study, the following recommendations are provided by the researcher. These recommendations would be useful to stakeholders such as: investors, company directors, stock brokers, managers of regulatory agencies to the Nigerian capital market.

i. The study suggested that investors should not limit their basis of portfolio selection on risk only, instead the contribution of an investment asset to their wealth should be considered also. The policy implication is that investment analysts, stock brokers and other agencies should provide such information to investors in guiding them to select feasible portfolios.

ii. Investments in Real Estates is a profitable business, the Nigerian capital market should encourage the sales of such financial assets on the floor. This will help to diversify risk in portfolio management because it is less risky and its price is not floppy.

iii. From the findings, the study concluded that the use of this knowledge will improve the practice of risk diversification through the theory portfolio management in the Nigerian capital market.

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