

Investment Portfolio and Performance of Mutual Funds in Nigeria

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Abstract

The study examined the performance of Mutual Funds' investment portfolio in Nigeria. The objective was to investigate the relationship between investments in money market securities, bonds, equity security and return on assets of Mutual Funds in Nigeria. The design of the study was ex-post facto research design. Twelve (12) Mutual Funds listed in the Nigerian Stock Exchange were studied. Data were obtained from the Nigerian Stock Exchange, National Bureau of Statistics, and the Central Bank of Nigeria and analyzed using the ordinary least square (OLS) multiple regression analysis. It was found that investment in money market securities does not significantly influence return on assets of mutual funds in Nigeria. Secondly, it was discovered that there is a significant negative relationship between investment in bonds and returns on assets of mutual funds in Nigeria. Next, investment in equity security does not significantly influence return on assets of mutual funds in Nigeria. Lastly, the study revealed that only investment in equity was positive and statistically significant, investment in bonds was negative and statistically significant while investment in money market securities was positive but statistically insignificant in the model. It was concluded from the findings that investment portfolio influences the performance of mutual funds in Nigeria. Based on the above findings and conclusion, it was recommended among others that mutual funds should focus on investment in equity while investment in bonds should be embarked with caution. Further, investment in money market securities can be plausible if carefully analyzed to ensure that it yield a significant contribution that will compensate for the resources committed by investors.

Keywords: Financial Assets, Investment Portfolio, Individual and Corporate Investors, Mutual Fund, Mutual Fund Companies, Performance of Mutual Funds in Nigeria

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1. Introduction

Individuals and corporate institutions invest for a period of time in expectation of receiving future returns that will compensate for the time, risk and resources committed. The motivation for investment is the desire to earn future returns, meet anticipated future cash outflow, and increase wealth. For a typical investor, he seeks to maximize income, ensure capital appreciation and safety of principal. This means that investment is driven by the expected future returns, capital preservation and appreciation. Whatever is the expectation(s), investment involves risk taking, because of the uncertainty in the future. The risk element in investment, which is assumed to be higher in financial investment because of the effect of inflation on the real value of money than real investment, has discouraged many investors from investing.

Many private investors do not have adequate knowledge of portfolio formation, which would help to spread or minimize risk, and maximize returns. This challenge of creating an optimal portfolio of multiple investments makes Mutual Fund managers relevant. In other words, individuals and institutional investors may choose not to trade securities directly for their own account but may direct their money to stock brokers and Mutual Funds companies that may purchase stock on their behalf.

Mutual Funds companies are non-bank financial intermediaries that pool funds from investors to invest in financial assets of government and corporations for the purpose of earning returns to achieve both the objectives of the investors and their corporate objectives. Mutual Funds mobilize savings from household and institutional

investors, invest the funds in financial securities, and manage the funds professionally to earn income. They accumulate funds from large number of investors and invest in diversified portfolios to limit investment risk and maximize returns. The incomes earned from the investments are in the form of dividends received on the shares of companies, interest income on bonds and deposits and other short-term financial securities. The Funds enjoy economies of scale in analyzing securities, investing and managing securities, and buying and selling securities. The money pooled from various investors creates greater purchasing power for Mutual Funds managers to form portfolio of investments that minimize risk and maximize returns than is possible for most individual investors. Thus, investing in Mutual Funds is less risky, and unit holders capitalize on the power of pooling funds and the proficient management of Fund managers to achieve their investment objectives.

In Nigeria, there are many Mutual Funds companies in operation, investing in various securities of varying maturity periods such as money market securities, equity, and fixed income securities. Mutual Funds perform financial intermediation functions by obtaining Funds from investors and investing them in bonds, equity security and money market instruments, issued by government and corporations.

The choice of asset mix, which is concerned with the proportion of the various securities in the portfolio, depends mainly on the expected returns, the risk tolerance disposition and the investment horizon of the investors. Therefore, in forming the portfolio of investments, Mutual Funds managers consider investors' preferences in terms of risk, return's objective, age group, income level, and social and religious values. Bhalla (2011) defined investment portfolio of Mutual Funds as the collection of financial securities held by the Funds at any point in time. Therefore, Mutual Funds portfolio is expected to ensure that investment risk is adequately spread to meet the risk perception of individual investors without sacrificing the return expectations of investors and corporate objectives of the Mutual Funds.

The choice of securities and the proportion of each security in the portfolio have been of concern to Mutual Fund managers over the years. Markowitz in 1952 developed a mean-variance model, which marked the beginning of what is known today as modern portfolio theory (Bhalla, 2011). This theory is expected to guide investors in securities selection and portfolio formation. However, the problems of securities selection and portfolio formation to maximize returns and minimize risk are still challenging both individual and institutional investors. This problem and the rapid growth in the financial sector after the implementation of the deregulation policy brought the need for Mutual Funds Companies. Despite the benefits which the Funds promise and the expectation for the Funds to become a significant investment hub in Nigeria, the market for Mutual Funds in Nigeria seems not to produce the required rate of returns to encourage investment in Mutual Funds (Oduwale, 2015; Ilo et al., 2018). The situation motivates the study to investigate the financial performance of Mutual Funds vis-a-vis their investment portfolio in Nigeria over the period, 2009 – 2019.

To guide the study, the following null hypotheses were formulated:

- H₀₁: Investment in money market securities does not significantly influence return on assets of Mutual Funds in Nigeria.
- H₀₂: There is no significant relationship between investment in bonds and the return on assets of Mutual Funds in Nigeria.
- H₀₃: Investment in equity security does not significantly influence return on assets of Mutual Funds in Nigeria.
- H₀₄: There is no significant relationship between investment in money market securities, bonds, equity security and return on assets of Mutual Funds in Nigeria.

2. Conceptual Review

2.1 Structure of Mutual Funds Investment

The structure of Mutual Funds investment is the combination of financial assets invested by Mutual Funds. It is the asset mix of investment portfolio of Mutual Funds. The investment portfolio depends on the types and nature of investors and their risk preferences (that is risk-averse investors and aggressive investors), risk element, asset base, income potentials, liquidity needs, available capital market and money market instruments, internal policy and regulatory provisions. Mutual Funds invest in financial assets of governments and companies. The securities invested form the investment portfolio of Mutual Funds, which are:

- Bonds (or debenture): These are fixed interest securities. They are long-term debt instruments and represent either loans or preference shares, which are redeemable. Corporate bonds are often called

debentures, which refer to borrowings with specified collaterals (Odife, 1999).

- **Equity Security:** Equity security represents ownership interest in any organization. The holders of equity shares occupy ownership position in a company (Pandey, 2004). The features of equity shares include: it is not redeemable, arrears of dividend are not accumulated, equity shares are not convertible, market value fluctuates and dividend is paid after payment of preference shares dividend (Tulsian & Tulsian, 2015).
- **Money Market Securities:** Money Market securities are short-term securities that have a life of one year or less. They are highly liquid debt securities, easily marketable with little chance of loss.

2.2 Theoretical Framework

2.2.1 Financial Intermediation Theory

The Theory of Financial Intermediation was propounded by John G. Gurley and Edward S. Shaw, in 1960. They were American Economists, who were motivated by the work of Goldsmith (1958), one of the foremost economists to recognize the role of financial institutionalization of savings through financial intermediaries (Bethune et al., 2019; Gurley & Shaw, 1960). Gurley and Shaw (1960) opined that the principal function of financial intermediaries is to purchase primary securities from ultimate borrowers and issue indirect debt for the portfolio of ultimate lenders.

Thus, the modern theory of financial intermediation states that financial intermediaries exist because market imperfection prevents savers and investors from trading directly with each other in an optimal way. This implies that banks and other financial intermediaries monitor and screen investors to bridge the maturity mismatch between savers and investors, reduce information asymmetries and transaction cost, and to facilitate payments between economic parties.

The theory has failed to specifically address (though impliedly) the risk aspect of the intermediation process and why savers deposit in banks instead of selecting investors themselves or why institutional and individual investors choose to invest in Mutual Funds instead of direct investment. However, the theory is foundational for this study and the portfolio theory that follows address the aspect of risk management, which this theory has failed to explain.

2.2.2 Portfolio Theory

Portfolio Theory (PT) otherwise called Modern Portfolio Theory or Portfolio Management Theory was first developed by Harry Max Markowitz, an American Economist in 1952. It is a quantitative analysis of how portfolio of investment can be diversified in order to maximize returns and minimize risk. The theory holds that assets should not be chosen based on how they perform in isolation but on how they interact with one another. The theory provides a normative approach to the investors' decision to invest in securities under risk.

Markowitz's concern on portfolio selection was on how to determine the best group of investments to hold taking into consideration both the expected return from the individual investment and the risk attached to it (Akinsulire, 2014). The feature of the portfolio theory is that investors should analyze the portfolio in its entirety and not merely one or two securities in isolation. The theory focuses attention to establishing guidelines for building portfolio of stock or a portfolio of projects (Pandey, 2004; Banerjee, 2009).

The two theories used in this study are relevant and they lay a solid theoretical foundation for this study. Specifically, the second theory, the portfolio theory (PT), which emphasizes on: (i) the risk, return and the effort of the portfolio managers to diversify and structure their portfolio of assets to minimize risk and maximize returns, and (ii) well-diversified portfolios of investment instead of investing all wealth in one security or forming portfolio of investment by considering the performance of single securities instead of the entire portfolio performance, strongly supports and lays a solid theoretical foundation for this study.

2.3 Empirical Review

This section reviews studies related to Mutual Funds carried out by other researchers. The studies are chronicled as follows:

Oduwale (2015) examined the performance of equity-based Mutual Funds in Nigeria between the years 2011-2014. Risk-adjusted measures such as Treynor ratio, Sharpe ratio and Jensen's alpha measure were used to assess the performance of equity and mixed Mutual Funds in Nigeria. The result showed that Mutual Funds did not outperform the benchmark of NSE all share index and Jensen's alpha was not statistically significant.

Kimeu (2015) investigated the effect of portfolio composition on the financial performance of investment companies listed on the Nairobi Security Exchange. Descriptive research design was employed in the study. Ordinary Least Square method was used to analyze the data. The study revealed that there is a positive significant relationship between financial performance of investment companies and investment in bond, equity and real estate.

Othman et al., (2015) investigated the relationship between macroeconomic variables and net asset value (NAV) of Islamic Equity Unit Trust Funds cointegrated with evidence from Malaysian unit trust industry. The aim of the study was to investigate the long-run relationship between the NAV and the selected macroeconomic variables. Vector Auto regression (VAR) was employed to investigate the relationship. The study revealed that NAV of the Islamic unit trust Funds in the Malaysian capital Fund cointegrated with chosen macroeconomic variables.

Shukla (2015) examined a comparative performance evaluation of selected Mutual Funds. The aim of the study was to examine the performance of selected Mutual Funds schemes under different categories and to examine the return from the selected Mutual Funds. Standard deviations, Beta, Alpha, R-square, Sharpe ratio were employed in this study. The study revealed that all the Funds have performed better than the benchmark.

Pasalkar (2015) examined a comparative study of Mutual Fund investment versus equity investment of Indian individual investors. The aim of the study was to compare Mutual Fund investment with direct equity investment. Sharpe ratio, Jensen's alpha ratio, Treynor and Mazuy, regression analysis were employed in this study. The study revealed that equity investment is more favoured.

Benjamin (2016) examined the extent managed Funds nets assets value has contributed to the capital market and economic growth and development. Longitudinal research design using descriptive statistics and regression analysis were employed in the study. The study revealed that managed Funds have significant and positive contribution on capital market and economic growth and development.

Mahamuda and Abdullahi (2017) studied the performance of Mutual Funds in Nigeria from 2015 to 2017. The performance measurement parameter such as beta, standard deviation, Shape, Treynor and Jensen's alpha ratios were employed to measure the performance of Mutual Funds in Nigeria. The result showed that Treynor ratio and Shape ratio were positive, meaning that the Funds provide superior risk-adjusted returns while Jensen's Alpha was negative, meaning that Mutual Fund's managers lack good stock selection skills.

Joanna (2017) investigated the impact of Mutual Fund performance on Mutual Fund market value with internet financial reporting (IRF) as intervening variable. The aim of this study was to analyze the effect of Mutual Fund performance on the internet financial reporting and its market value. The study used path analysis, which is a straight-forward extension of multiple regression, and Kendall of concordance test. The study revealed that Mutual Fund performance impact on Mutual Fund market value.

Ilo et al., (2018) examined the performance of Mutual Funds in Nigeria from January 2012 to December 2015 with a view to evaluate stock selection skills of Fund managers. Treynor ratio, Sharpe ratio and Jensen's alpha were used to evaluate the performance of Mutual Funds and the selection ability of managers. The result showed that the Sharpe and Treynor ratios were consistently negative and the Jensen's alpha was insignificant, which indicated that Mutual in Nigeria underperform as they consistently failed to provide superior risk-adjusted returns. The study also disclosed poor stock selection ability of Mutual Funds managers.

Chaudhary (2018) examined a comparative performance evaluation of selected Mutual Fund dividend schemes in India. The aim of this study was to evaluate the risk return performance of selected sectorial dividend schemes of Mutual Funds. The study employed Sharpe's performance measure; Treynor's performance measure and Jensen portfolio performance measure for evaluation and comparison. The study revealed that all selected schemes performed better than the benchmark return and the average performance of the sample schemes were also outstanding throughout the study period.

Makau and Ambrose (2018) empirically reviewed the impact of portfolio diversification on financial performance of investment firms listed in Nairobi Securities Exchange, Kenya. Explanatory non-experimental research design was employed. The study revealed that portfolio diversification improves on performance of investment firms, but argued that there are contradictory results concerning the relationship between diversification and performance, and that the impact of diversification on firm performance has not been given adequate attention in developing countries.

Nabi (2018) investigated performance and evaluation of portfolio of Mutual Funds. The aim was to measure the performance of Pakistani Mutual Fund industry from 2014 to 2017. Sharpe ratio was employed to measure risk adjusted performance. The study revealed that Funds managers have the ability to diversify investment to

decrease the risk.

Obiero (2019) investigated the effect of portfolio diversification on the financial performance of investment companies listed on the Nairobi Securities Exchange, Kenya (2010-2017). The aim was to determine the effects of bonds, real estate and equity investment on the financial performance of investment companies. Descriptive statistics and regression analysis were employed in this study. The study revealed that bonds, real estate and equity investments have significant influence on financial performance of investment companies listed on the Nairobi Securities Exchange in Kenya. The study also revealed that a significant positive relationship exist between investment in equity securities and the financial performance of investment firms listed on the Nairobi Stock Exchange.

Mansor et al., (2020) studied the investment performance of ethical equity Funds in Malaysia. The aim was to investigate the investment performance of Malaysian Islamic equity Funds and a matching sample of conventional equity Funds relative to their market benchmark. Integrated model was employed to simultaneously capture the market timing and selectivity skills of Funds managers. The study revealed that the Islamic Funds do not match the performance of the conventional counterparts in market timing and selectivity skills, although neither outperforms the market.

Igbinosa (2020) investigated performance of Mutual Funds with evidence from Nigeria. The aims were to investigate the ability of Mutual Funds to generate persistent returns above market returns to investors; and to determine the relationship between Mutual Funds types (portfolio) and Mutual Funds' performance. Risk-adjusted performance measures, Sharpe ratio, Treynor ratio and Jensen alpha were employed in the study. The study revealed that three Funds, real estate Funds, bond Funds, and fixed income bond beat the market benchmark index by generating returns above market return. Also, bond Funds have positive significant values for all five risk adjusted performance criteria employed in the analysis.

3. Research Methodology

3.1 Research Design

The research design used in this study was ex-post facto. The design is considered appropriate because it allowed for the use of previously gathered data to measure the relationship between investment portfolio and performance of Mutual Funds in Nigeria. The data required for this study were obtained from secondary sources only and the population of the study comprised twelve listed and functional Mutual Funds in the Nigerian Stock Exchange.

The study employed descriptive and inferential statistics. Wooldridge Test for serial correlation and VIF (Variance Inflation Factor) for multi-collinearity test were employed to improve the validity of statistical inferences. The inferential statistic made use of ordinary least square multiple regression for data analysis.

3.2 Empirical Specification of Model

Based on the hypotheses, the following models were specified as derived from the conjecture that the performance of Mutual Funds in Nigeria is related to investment portfolio of the Funds. This assumption can be expressed, thus:

Performance of Mutual Funds (PMF) = f (investment portfolio (IP))

$$PMF = f (IP) \quad \text{Equation 1}$$

The econometric model of the functional relationship in equation one (3.2) above can be written thus, considering the variables of investment portfolio and performance of Mutual Funds in Nigeria. The size of Mutual Funds and inflation rate are incorporated into the model as control variables.

$$ROA_{it} = \beta_0 + \beta_1IMMS_{it} + \beta_2Siz_{it} + \beta_3infr_{it} + \epsilon_{it} \quad \text{Equation 2}$$

$$ROA_{it} = \beta_0 + \beta_1IB_{it} + \beta_2Siz_{it} + \beta_3infr_{it} + \epsilon_{it} \quad \text{Equation 3}$$

$$ROA_{it} = \beta_0 + \beta_1IES_{it} + \beta_2Siz_{it} + \beta_3infr_{it} + \epsilon_{it} \quad \text{Equation 4}$$

$$ROA_{it} = \beta_0 + \beta_1IMMS_{it} + \beta_2IB_{it} + \beta_3IES_{it} + \beta_4Siz_{it} + \beta_5infr_{it} + \epsilon_{it} \quad \text{Equation 5}$$

where:

ROA_{it} = Return on assets i at time t; IMMS_{it} = Investment in money market securities i at time t; IB_{it} = Investment in bonds i at time t; IES_{it} = Investment inequity security i at time t; infr_{it} = inflation rate i at time t;

S_{it} = Size of Mutual Funds i at time t ; ϵ_{it} = Error term; β_0 = Intercept or regression constant; $\beta_1, \beta_2, \beta_3, \beta_4$ = coefficients of the independent or explanatory variables.

4. Data Presentation and Analysis

4.1 Trend Analysis

Figure 4.1 shows the interactive trend between the dependent variable and all the explanatory variables including the controlled variables. The essence of this graph is to show visually how the relationship among these variables is so as to be able to guess the nature of the relationship expected. From the graph, it does appear that the changes in the dependent variables are not associated with changes in the explanatory variables. This is because the changes are not in the same direction. This would mean that there is less likely that a significant relationship would be found among these variables when jointly examined for a combined effect of the explanatory variables on the dependent variables. Also, this seems to indicate a violation of a Classical Linear Regression Model (CLRM) assumption of linearity or co-movement as well as stationarity of variables which are preconditions for the performance of statistical test of significant in a regression analysis.

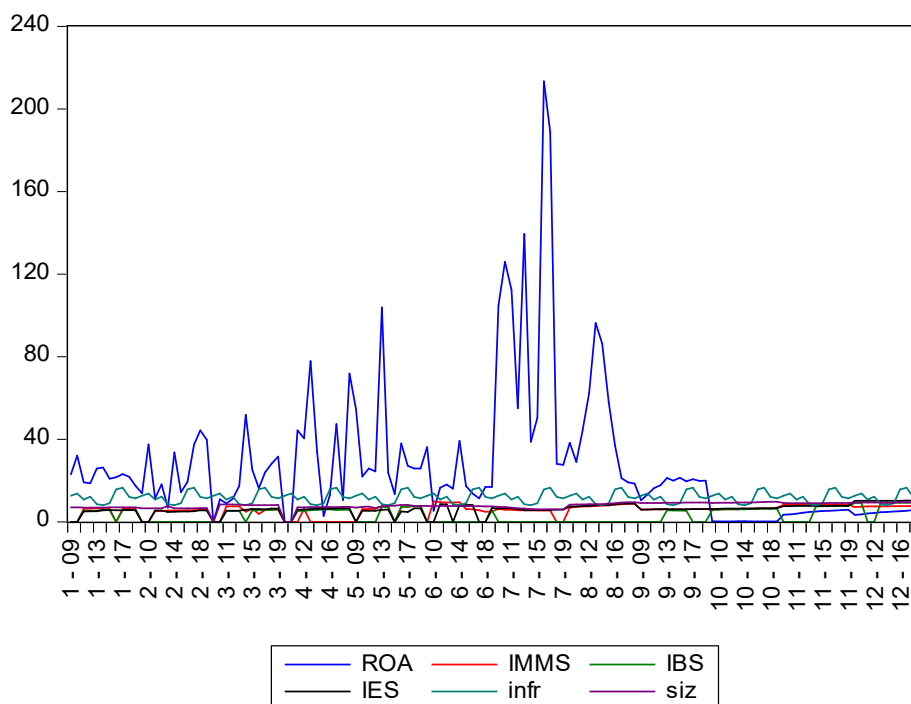


Figure 4.1: Trend showing the interaction among study variables.

Source: Researcher's computation

4.1.1 Trend of ROA and IMMS

In figure 4.2, the trend between ROA and IMMS is presented. It shows that IMMS is likely maintaining a relatively steady trend whose changes are less likely to lead to a corresponding change in the ROA. This also tends to violate the classical linear regression assumption mentioned above. A test of the stationarity of these variables is conducted in this chapter in order to statistically ascertain that this assumption is fulfilled before using the data for hypothesis testing.

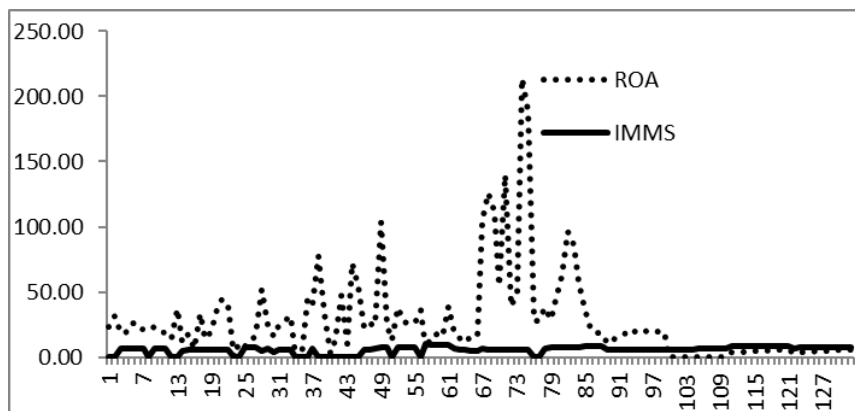


Figure 4.2: Trend showing the interaction between ROA and IMMS

Source: Researcher's computation

4.1.2 Trend of ROA and IBS

Figure 4.3 depicts the relationship between ROA and IBS. It demonstrates that IBS most likely maintaining a pretty stable trend, with changes less likely to result in a commensurate shift in the ROA. This also tends to contradict the previously noted conventional linear regression assumption. In this chapter, a test of the stationarity of these variables is performed to ensure that this assumption is met statistically before utilizing the data for hypothesis testing.

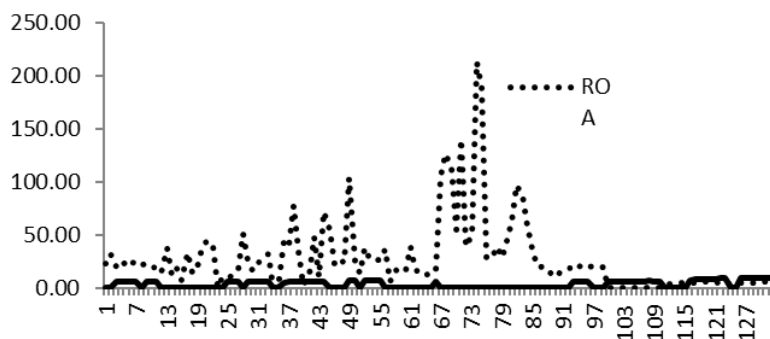


Figure 4.3: Trend showing the interaction between ROA and IBS

Source: Researcher's computation

4.1.3 Trend of ROA and IES

It is seen in figure 4.4 how the relationship between ROA and IES is changing. It demonstrates that IES is most likely maintaining a very stable trend, with changes in the trend less likely to result in a commensurate shift in the ROA. The assumption of conventional linear regression, which was discussed before, is also violated in this case. In this chapter, a test of the stationarity of these variables is carried out in order to statistically establish that this assumption is met before utilizing the data for hypothesis testing.

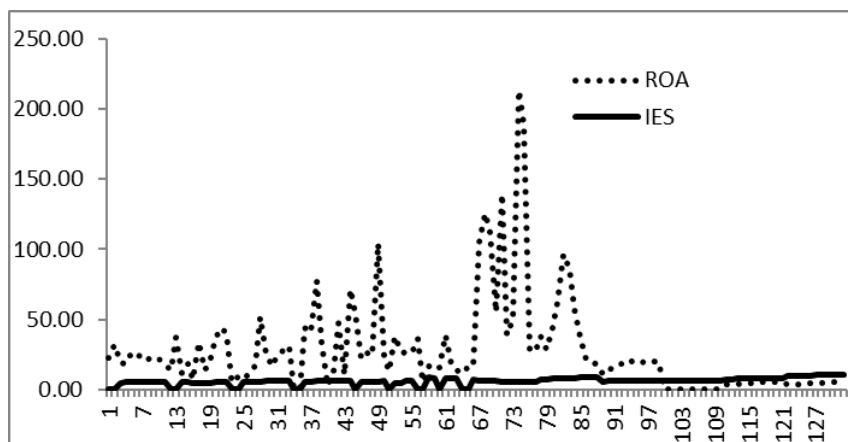


Figure 4.4: Trend showing the interaction between ROA and IES

Source: Researcher's computation

4.2 Descriptive and Econometric Analysis

4.2.1 Descriptive Analysis

Table 4.1 shows the summary of descriptive statistics variables of the study. For every variable, the number of observations is 132 as shown in Appendix III.

Table 4.1 Descriptive Statistics of Research Variables

Stats.	ROA	IMMS	IBS	IES	INFR	SIZ
Mean	27.18	5.66	3.09	6.02	11.87	7.86
Median	18.85	6.19	0.00	6.21	12.10	8.03
Maximum	213.36	9.91	9.27	10.25	16.50	9.70
Minimum	0.00	0.00	0.00	0.00	8.10	0.00
Std. Dev.	33.91	2.76	3.41	2.57	2.63	1.63
Skewness	2.93	-1.18	0.35	-1.01	0.23	-2.47
Kurtosis	13.55	3.29	1.46	4.14	2.11	12.90
Jarque-Bera	800.65	31.18	15.79	29.78	5.53	672.56
Probability	0.00	0.00	0.00	0.00	0.06	0.00
Sum	3587.38	747.17	407.57	795.22	1567.20	1038.06
Sum Sq. Dev.	150629.60	997.55	1526.50	867.98	903.86	347.55
Observations	132	132	132	132	132	132

Source: Researcher's computation

The result of the descriptive statistics of variables as contained in Table 4.1 shows the mean value for the variables. From the result, the Mutual Funds have 27.18% of ROA, 5.66% of IMMS, 3.09% of IBS and 6.02% of IES. This can be interpreted to mean that Mutual Funds, over the period covered in this study recorded about 27.18% growth in ROA and have invested more in IES followed by IMMS and lastly by IBS. At this point, it is insufficient to know whether the growth rate in the dependent variables, are caused by the growth rates in the independent variables which are all lesser comparatively. A test of these changes will be performed in section 4.3 of this study to determine the changes in relationship among these variables. The low values of the standard errors of the mean suggest that this growth rates are highly likely to be true.

4.2.2 Result of the Test of Normality Assumption

The result of the above econometric requirement is presented in Table 4.1 under the JB - Jarque-Bera statistics. From the probability values, only inflation rate has a probability value that is greater than 0.05, meaning inflation rate has fulfilled the requirement of normality assumption. Other variables failed this assumption and were subsequently transformed into a logarithm function in order to achieve normality (Appendix IX).

4.2.3 Simple Correlation Matrix of Research Variables

This matrix in Table 4.2 shows the relationship among research variables. The purpose is to reveal variables that correlate with one another. Basically, focus in this matrix is primarily on the correlation among the independent variables and, the various controlled variables. As presented in Table 4.2, in terms of strength, the correlation coefficients among the variables are less than 80% and this is less likely to cause multi-collinearity problem in the estimated parameters. Directionally, all except inflation rate have negative relationship with the dependent variable. This suggests that the expected relationship between key independent and the dependent variables are likely to be negative.

Table 4.2: Simple Correlation Matrix of Variables

	ROA	IMMS	IBS	IES	INFR	SIZ
ROA	1					
IMMS	-0.08	1				
IBS	-0.28	0.16	1			
IES	-0.03	0.58	0.38	1		
INFR	0.01	-0.09	-0.04	-0.08	1	
SIZ	-0.23	0.55	0.34	0.58	-0.03	1

Source: Researcher's computation

4.2.4 Result of the Unit Root Test

In Appendix II, the results of the panel unit root test are presented for all variables of the study. From the results, all the variables are stationary at a level. This implies that the data can be used at a level or as is for further analysis in this study.

4.2.5 Econometric Analysis

In this section, the various hypotheses developed for this study were tested and the emerged result interpreted. Interpretation of the results begins with the analysis of the control variables used. The key concerns in this analysis were relevant diagnostics test results. The essence of this analysis was to ascertain the correctness of the model specified in Section 3.2 and ensure that relevant econometric post-estimation assumptions were not violated at the instance of which the results from the models would be valid and reliable.

However, the extracted result and analysis are presented in different columns in their respective tables. Except for the result of the first hypothesis (as contained in Table 4.3), all other tables has three columns: the first column contains the variables of the study; the second column (Model 1) contains result of the regression of controlled variables on dependents variable without independent variable(s); the third column (Model 2) contains result of the regression of independent and controlled variables on the dependent variable.

4.3 Test of Hypotheses

4.3.1 Test of Hypothesis 1

The result of the hypothesis that investment in money market securities does not significantly influence return on assets of Mutual Funds in Nigeria is presented in Table 4.3.

Interpretation of the Result of Hypothesis 1

Therefore, the interpretation of the result of the test of the above hypothesis is based on Result 3 in column four of Table 4.3. From the above result, it is shown that the control variables play a minimal role in performance of the Mutual Funds in terms of the ROA as indicated by a Marginal R-square value of 5.1% returned by model 1. Thus by including the control variables the explanatory power of the independent variable improved to 6.7% as returned by model 3. While model one passed, model two failed specification test as the F-stat value was insignificant, hence the re-specification and use of model 3. The result of model 3 returned: (a) an insignificant coefficient of 1.398 for L.IMMS (one-period lag IMMS) given that the corresponding p-value is greater than the theoretical p-value of 0.05 (Appendix IV). This implies that investment made by Mutual Funds in IMMS does not have any significant effect on their return on asset.

Quantitatively, a percentage investment in IMMS, other investment being constant leaves ROA unchanged from 65.20%. The F-statistics value of 2.78 is statistically significant meaning that the overall model used in predicting the relationship is good and valid such that the estimated parameters are valid, reliable and can be used for prediction and policy decision making. Therefore, the researcher has no sufficient evidence to reject the null hypothesis that investment in money market securities does not significantly influence return on assets of

Mutual Funds in Nigeria. Together with controlled variables, the model explains just about 6.7% of the variations in ROA. A total of 93.3% are explained by variables that are not included in the model. Overall, the model predicting the relationship between IMMS and ROA of Mutual Funds has a very marginal power, meaning that IMMS is an inconsequential factor that can be excused in looking for the determinants of ROA of Mutual Funds.

Table 4.3: Test of Hypothesis I

VARIABLES	(Model1) ROA	(Model 2) ROA	(Model 3) ROA
IMMS		0.717 (1.266)	
INFR	-0.0102 (1.108)	0.0450 (1.115)	0.106 (1.208)
SIZ	-4.713*** (1.786)	-5.374** (2.138)	-5.860*** (2.030)
L.IMMS			1.398 (1.212)
Constant	64.36*** (19.76)	64.85*** (19.83)	65.20*** (21.37)
Observations	132	132	121
<i>Model Characteristics and Diagnostics</i>			
R-squared	0.051	0.054	0.067
Adj. R ²	0.037	0.031	0.043
F-Stat.	0.033**	2.42	2.78**
Wooldridge	1.810		-
VIF	1.00		1.11

NOTE: Standard errors in parentheses (for model parameters),

Wooldridge Test for serial correlation; VIF (variance Inflation Factor) for multi-collinearity test;

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

Source: Researcher's computation

4.3.2 Test of Hypothesis II

The second hypothesis that there is no significant relationship between investment in bonds and return on assets of Mutual Funds was tested and the results as extracted from Appendix V are presented in Table 4.4.

Table 4.4: Test of Hypothesis II

VARIABLES	(Model 1) ROA	(Model 1) ROA
IBS		-2.307** (0.888)
INFR	-0.0102 (1.108)	-0.0987 (1.084)
SIZ	-4.713*** (1.786)	-3.053 (1.861)
Constant	64.36*** (19.76)	59.48*** (19.42)
Observations	132	132
<i>Model Characteristics and Diagnostics</i>		
R-squared	0.051	0.099
Adj. R ²	0.037	0.078
F-Stat.	0.033**	4.68**
Wooldridge	1.810	1.324
VIF	1.00	1.09

NOTE: Standard errors in parentheses (for model parameters),
 Wooldridge Test for serial correlation; VIF (variance Inflation Factor) for multi-collinearity test;
 *** p<0.01, ** p<0.05, * p<0.1.

Source: Researcher's computation

From the results, the coefficient of -2.307 for IBS is statistically significant. This implies that IBS has a significant effect on ROA. However, the effect is negative meaning that more investment in IBS led to less ROA. The model returning this result is statistically significant as confirmed by an F-statistic value of 4.68 which is significant at 5% level. Consequently, the researcher does not have sufficient evidence to support the null hypothesis that there is no significant relationship between investment in bonds and return on asset of Mutual Funds.

Interpretation of the Result of Hypothesis II

Therefore, investment in bond is a key determinant of ROA of Mutual Funds in Nigeria. This would mean quantitatively that if Mutual Funds increase their investment in bond by one percentage point, their returns on asset will reduce by about 2.31%. The R-Square value of 0.099 shows a marginal explanatory power of the model, meaning that only 9.9% of the variations in the ROA are explained by the variables in the model. About 90.1% of the remaining variations are explained by variables not included in the model.

4.3.3 Test of Hypothesis III

The third hypothesis states that investment in equity security does not significantly influence return on assets of Mutual Funds in Nigeria. The result of the test of this hypothesis as contained in Appendix VI is extracted and presented in Table 4.5.

From the results, the coefficient of 1.888 for IES was not significant. This implies that investment in equity was not a significant determinants or influencers of ROA of Mutual Funds in Nigeria. This means that more investment in IES led to no significant improvement in ROA.

Table 4.5: Test of Hypothesis III

VARIABLES	(Model 1) ROA	(Model 2) ROA
IES		1.888 (1.381)
INFR	-0.0102 (1.108)	0.110 (1.107)
SIZ	-4.713*** (1.786)	-6.425*** (2.176)
Constant	64.36*** (19.76)	65.01*** (19.70)
Observations	132	132
<i>Model Characteristics and Diagnostics</i>		
R-squared	0.051	0.065
Adj. R ²	0.037	0.043
F-Stat.	0.033**	2.96**
Wooldridge	1.810	0.894
VIF	1.00	1.34

NOTE: Standard errors in parentheses (for model parameters),
 Wooldridge Test for serial correlation; VIF (variance Inflation Factor) for multi-collinearity test;
 *** p<0.01, ** p<0.05, * p<0.1.

Source: Researcher's computation

The model returning this result is statistically significant as confirmed by its F-statistic value of 2.96, which is significant at 5% level. From result on Table 4.5 above, the researcher does not have sufficient evidence to reject the null hypothesis that there is no significant relationship between investment in equity security and return on asset of Mutual Funds in Nigeria.

Interpretation of the Result of Hypothesis III

This means that IES is not a significant contributor to ROA of Mutual Funds in Nigeria. The R-Square value of 0.043 indicates that the model has a low explanatory power, meaning that 6.5% of the variations in the ROA are explained by the independent variable -IES in the model while 93.5% of the remaining variations are explained by variables not included in the model.

4.3.4 Test of Hypothesis IV

Finally, the fourth hypothesis was that there is no significant relationship between investment in money market securities, bonds, equity security and returns on asset of Mutual Funds in Nigeria the results of the test of this hypothesis are contained in Appendix VII and an extract of relevant parameters are presented in Table 4.6.

Table 4.6: Test of Hypothesis IV

VARIABLES	(Model 1) ROA	(Model 2) ROA
IMMS		-0.483 (1.335)
IBS		-2.790*** (0.914)
IES		3.081** (1.505)
INFR	-0.0102 (1.108)	0.0424 (1.079)
SIZ	-4.713*** (1.786)	-5.052** (2.284)
Constant	64.36*** (19.76)	59.20*** (19.27)
Observations	132	132
<i>Model Characteristics and Diagnostics</i>		
R-squared	0.051	0.129
Adj. R ²	0.037	0.095
F-Stat.	0.033**	3.74**
Wooldridge	1.810	0.298
VIF	1.00	1.52

NOTE: Standard errors in parentheses (for model parameters), Wooldridge Test for serial correlation; VIF (variance Inflation Factor) for multi-collinearity test; *** p<0.01, ** p<0.05, * p<0.1.

Source: Researcher's computation

From the results, IMMS with a coefficient of -0.483 is negative and insignificant in the model; IBS with a coefficient of -2.790 is negative and significant in the model; and, IES with a coefficient of 3.081 is positive and significant in the model. From the F-value of 3.74, which is significant at 5%, it is confirmed that the model returning this result is statistically significant. As a result, the null hypothesis that there is no significant relationship between investment in money market securities, bonds, equity security and return on asset of Mutual Funds is not supported by this finding.

Interpretation of the Result of Hypothesis IV

The implication of this is that IMMS, as earlier found out was not a significant contributor to ROA of Mutual Funds performance in Nigeria while IBS and IES were. However, while IBS affect ROA negatively, IES's effect on ROA is positive. Thus, more investment in IMMS led to no significant improvement in ROA; more investment in bond securities led to reduction in ROA; and, more investment in equity security led to improved performance for Mutual Funds in Nigeria.

Therefore, IBS and IES are key determinants of ROA of Mutual Funds in Nigeria. This would mean quantitatively that a percentage increase in investment in IBS would reduce ROA by about 2.79% while a percentage increase in IES will improve ROA by about 3.08%. The R-Square value of 12.9 indicates that the model has a weak fit and weak explanatory power, meaning that 12.9% of the variations in the ROA are jointly explained by the variables in the model. About 87.1% of the remaining variations are explained by variables not included in the model.

4.4 Discussion of Findings

In line with the four hypotheses, the finding representing each hypothesis is discussed in turn below.

4.4.1 IMMS on ROA

Hypothesis one: investment in money market securities does not significantly influence return on assets of Mutual Funds in Nigeria. There was no sufficient evidence to reject the null hypothesis that investment in money market securities do not significantly influence return on assets of Mutual Funds in Nigeria. Overall, the model predicting the relationship between IMMS and ROA of Mutual Funds has a very marginal power, meaning that IMMS is an inconsequential factor that can be excused in looking for the determinants of ROA of Mutual Funds.

This result does not agree with the a priori expectation of the variables. Given that Mutual Funds invest more on money market securities, the expectation was that such investment would have significant positive influence on ROA but reverse is the case. In the study carried out by Igbinsosa (2020), it was discovered that money market Funds beats the market benchmark index in the Nigerian financial market.

The finding obtained in this study was in line with the findings of Ado et al., (2020) that money market securities have negative and insignificant effect on financial performance of Mutual Funds in Nigeria. Kimani and Aduda (2016) found out that money market securities generated least return compared to other securities in the portfolio. The implication of the result is that investment in money market securities has insignificant influence on ROA of Mutual Funds in Nigeria. This could be as a result of the fact that the returns from money market securities are low. Also, evaluating the performance of a particular security violates the portfolio theory, which states that assets should not be chosen into the portfolio based on how they perform in isolation but on how they interact with one another to maximize returns and minimize risk.

4.4.2 IBS on ROA

In line with hypothesis two: there is no significant relationship between investment in bonds and return on assets of Mutual Funds in Nigeria. There is a significant negative relationship between investment in bonds and returns on assets of Mutual Funds in Nigeria. The finding is not in agreement with the a priori expectation of the variables. The findings of Ado et al (2020) and Ilo et al., (2018) were in tandem with the finding of the present study. They found out that investment in bonds has a negative effect on ROA of Mutual Funds, and investment in this category failed to provide superior risk-adjusted returns and also disclose poor stock selection ability.

On the contrary, Kamwaro (2013), Kimeu (2015), Chawala (2014), Makau and Ambros (2018), Obiero (2019) and Igbinsosa (2020) differ in their results. They found out that investment in bonds have a significant positive influence on financial performance of Mutual Funds. In the study carried out by Igbinsosa (2020), it was discovered that bonds beats the market benchmark index by generating returns above market returns and have positive statistical values for all five risks adjusted performance criteria employed by the analysis. Obiero (2019) disagrees with the finding of the present study, which in his study concluded that bond investment, real estate and equity securities have significant influence on the financial performance of investment companies listed in the Nairobi Securities Exchange in Kenya.

Therefore, investment in bond is a key determinant of ROA of Mutual Funds in Nigeria. This would mean quantitatively that if Mutual Funds increase their investment in bond by one percentage, their returns on asset will reduce by about 2.31%.

4.4.3 IES on ROA

The third hypothesis states that investment in equity security does not significantly influence return on assets of Mutual Funds in Nigeria. Investment in equity security does not significantly influence return on assets of Mutual Funds in Nigeria. This means that IES is not a significant contributor to ROA of Mutual Funds in Nigeria. The finding does not agree with a priori expectation as investment in equity security is not a significant determinants or influencers of ROA of Mutual Funds in Nigeria. The result obtained is in support of the findings of Lemeshko and Rejnus (2015) and Nimalathasan and Gandhi (2012), which their study revealed that investment in equity security does not significantly influence ROA of Mutual Funds.

This finding is, however, inconsistent with those of Kimeu (2015), Obiero (2019) and Igbinsosa (2020), which in their various studies concluded that investment in equity security has significant positive relationship with ROI of Mutual Funds in Nigeria. The implication of this present result is that increase investments in equity security will have no significant improvement in ROA of Mutual Funds in Nigeria.

4.4.4 IMMS, IBS, and IES on ROA

Hypothesis four states that there is no significant relationship between investment in money market securities, bonds, equity security and return on assets of Mutual Funds in Nigeria. It was found out that there is a significant relationship between investments in money market securities, bonds, equity security and return on assets of Mutual Funds in Nigeria. This finding agreed with the a priori expectation of the variables and is in tandem with the submission of Karimi (2013), Kamwaro (2013), Kimeu (2015), Kimani and Aduda (2016), Makau and Ambrose (2018), Obiero (2019) and Igbinsosa (2020), which in their various studies concluded that there is a significant positive relationship between investment portfolio and ROA and ROE of Mutual Funds in Nigeria. This implies that the structure of investment portfolios of Mutual Funds affect the ROA of the Funds in Nigeria. The result is not surprising because it aligns with the principle embedded in the portfolio theory that portfolio risk can be reduced and returns maximized by holding a combination of assets. The finding of this

study is, however, inconsistent with that of Ilo, et al (2018), which his study revealed that Mutual Funds failed to provide superior risk-adjusted returns and also disclose poor stock selection ability.

5. Conclusion and Recommendations

The study focused on examining the relationship between Mutual Funds investment portfolio and the performance of Mutual Funds in Nigeria. To achieve this objective, investment in money market securities, bonds, equity security were considered separately with control variables and regressed against ROA of Mutual Funds in Nigeria. It was found out that investing in a particular security does not guarantee satisfactory return on assets of Mutual Funds. Therefore, portfolio investment which is in line with Portfolio Theory that provided the foundation to this study revealed that only investment in equity was positive and statistically significant, investment in bonds was negative and statistically significant while investment in money market securities was positive but statistically insignificant in the model. There is significant relationship between investments in bonds, equity security and ROA of Mutual Funds in Nigeria. This finding provides a basis for the conclusion that investment portfolio influences the performance of Mutual Funds in Nigeria

Based on the findings of this study, the following recommendations are made that:

- (i) Mutual Funds in Nigeria should not invest in only one particular security, which in this case is money market securities, as returns on such investment will not influence return on assets positively.
- (ii) Mutual Funds in Nigeria should not invest in only bonds as returns on such investment will have a negative relationship to return on assets of mutual funds in Nigeria.
- (iii) Mutual Funds in Nigeria should appreciate the importance of Portfolio Investment and should consider creating investment portfolio comprising both risky and risk-free security.
- (iv) Mutual Funds should focus on investment in equity while investment in bonds and money market securities should be embarked with caution to ensure that it yield a significant return that will compensate for the resources committed by investors.

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