



INFLUENCE OF BEHAVIOURAL FINANCE THEORIES ON INDIVIDUALS' INVESTMENT PERFORMANCE: EVIDENCE FROM THE NIGERIAN STOCK MARKET

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ABSTRACT

Empirical evidence from developed countries have established that behavioural finance theories do have significant influence on individuals' investment performance in stock market, but there is very limited number of studies conducted in less developed countries especially in Sub- Saharan Africa and Nigeria in particular. In view of this, this paper attempts to bridge the gap by examining the influence of the behavioural finance theories on individuals' investment performance based on the Nigerian stock market context. The data collected were analysed by method of structural equation modelling using AMOS Software. The findings revealed that only heuristics theory was found to have significant negative impact on the individuals' investment performance. The prospect, market, and herding theories were found to have positive but insignificant impacts on investment performance. The paper concludes that behavioural finance theories are highly prevalent among individual investors, but have less influence on investment performance at the Nigerian stock market. The result is consistent with the argument proposed by the proponents of behavioural finance that the investment performance of individual investors are influenced by cognitive and affective biases, which result in irrational decision and poor investment performance in stock market. This study, proposed that investors need to be aware of this bias and its resultant implication on their investment performance. The security market operators need to intensify efforts in increasing awareness about these behavioural biases, financial literacy, and basic principles of stock market operations among the investors so as to enable them make an informed decision about the stock investment.

KEYWORDS: Behavioural finance theories, Investment performance, Nigerian stock market.

1. INTRODUCTION

The efficient market hypothesis (EMH) is the dominant neoclassical financial theories, defined by Fama (1974), that in an efficient market, security prices are equal to the mathematical expectations of the present value of future pay offs of the security, reflecting all the information available at the time. Asset pricing models that are consistent with this framework and emphasize the fundamental value of securities are called theoretical or traditional models. These include the early asset-pricing model of Gordon (1962), the Capital Asset Pricing Model (CAPM) introduced by Sharpe (1964), Lintner (1965), Mossin (1966), and the Fama and French three-factor model (Fama and French, 1992, 1996). However, with the passage of time empirical evidence suggests that there are many market anomalies that cannot be explained by efficient market theories, among which includes excess volatility of realized stock returns, winner-looser effects and the calendar effects.

The impact of these anomalies leads to the emergence of a new paradigm of financial research known as behavioural finance. This new field applies psychology to determine the reasons of purchase, combinations and divestments of assets (Subrahmanyam, 2007). Xu (2010) opines that behavioural finance proposes that some market phenomena is better understood by considering that investors are not fully economically rational and that human behavioural biases can influence the financial decisions of investors and their subsequent performance. Perhaps the first place to look is the global financial crisis and the crash of the Nigerian stock market during the period 2007 – 2009. Much of the development of the Nigerian stock market, prior to the global meltdown, can be attributed to the consolidation/recapitalization of banks in 2005/2006, where banks were asked to raise their share capital from N2 billion to N25 billion. The sudden inject of capital into the market created buoyancy

and a bull market. Many investors were attracted to the market because of the high share prices. However, the trend was not sustainable and the market sled to bear from its peak of N13.5 trillion in March 2008, to less than N4.6 trillion in January 2009 (Olisaemeka, 2009; Nwude, 2012a). In the same period, the Nigerian Stock Exchange (NSE) All-Share Index (ASI) decreased from about 66000 basis points to less than 22000 basis points (Obamuyi, 2013). The Nigerian equities market also decreased from 38.8% of Nigeria's GDP in 2008 (at the market's high) to 6.8% (Okumagba, 2012). These extreme movements have been settled (Abubakar & Oladele, 2015) to be of contagion effect from the global melt down as suggested by Sunusi (2011) and contrary to Soludo, (2009) both cited in Abubakar & Oladele. Neoclassical theories though, in both cases, have failed to account for these extreme market place positions. The question that seeks for attention is, therefore, the extent to which behavioural finance theories influence the investment performance of individual investors at the Nigerian stock market. A number of scholars have investigated the relevance of behavioural finance (Tversky & Kahneman, 1974, Daniel, Hirshleifer & Subramanyam, 1998, Barberish & Thaler, 2003, Thaler, 1999, Shefrin, 2008, Shiller, 2002, Barber & Ordean, 1999 and 2001) to performance but not to the level of satiation and not in the context of Nigeria. This paper intends to ascertain the impact of behavioural finance theories on the investment performance of individual investors in the Nigerian stock market. It therefore aims at answering the question above and to increasing the limited number of empirical studies that investigate the impact of behavioural finance theories on individual investors' performance especially in the Nigerian stock market. To achieve this objective, it looks at the extant literature to ascertain existing gap then sets out the methodology for an empirical investigation. This is followed by results and discussions, implications and recommendations in that order.

2.0 LITERATURE REVIEW

According to Ritter (2003), behavioural finance is based on psychology, which suggests that human decision processes are subject to several cognitive illusions. These illusions are divided into two groups: illusions caused by heuristics and illusions rooted from the adoption of mental frames as grouped in the prospect theory (Waweru, Munyoki, & Uliana, 2008). These two categories as well as market and herding theories make up behavioural finance theories. The reviewed theories can be found in Audu and Abubakar (2016), while the measurement of the exogenous variable (investment performance) is presented in section 2.1 below.

2.1 Investment Performance

Lin and Swanson (2003) measure investment performance using three criteria of returns (raw returns, risk-adjusted returns, and momentum-adjusted returns) through five time horizons (daily, weekly, monthly, quarterly, and annually). Oberlechner & Osler (2004) measure investment performance by investment return rate and trading experience. They believe that investment return rate (or profit) presents the investment performance objectively. Investors evaluate their rate of return in comparison to their peers' profits. In summary, there are quite many methods to measure the stock investment performance. The prior authors mainly use the secondary data of investors' results in the security markets to measure the stock investment performance (Lin & Swanson (2003), Kim & Nofsinger (2003) and so on). However, this

paper asks the investors to evaluate their own investment performance, so that the measurements of investment performance follow the research of Oberlechner & Osler (2004) for investment return rate, and Kengatharan & Kengatharan (2014) for the satisfaction on investment. In more details, the return rate of stock investment is evaluated by objective and subjective viewpoints of individual investors. The subjective assessment of investors is made by asking them to compare their currently real return rates to their expected return rates while the objective evaluation is done by the comparison between the real return rates and the average return rate of the security market. Therefore, the satisfaction levels of investment decisions together with investment return rate are proposed as measurements for the investment performance in this paper.

2.2 Empirical Findings

Some empirical studies were carried out previously to find out the influence of the behavioural finance theories on investment performance. Kenthangaran & Kenthangaran (2014) had investigated the behavioural factors influencing individual investors' decisions and performance at the Colombo Stock Exchange. The findings revealed that only three of the variables examined have influence on the investment performance. The variables from herding factor and overconfidence from heuristics construct were found to have negative influence on the investment performance. While anchoring from heuristics was found to have positive influence on the investment performance. Babajide and Adetiloye (2012) conducted an empirical study about investors' behavioural biases recommended by mercer consulting on the Nigerian security market. The study found strong evidence that overconfidence, loss aversion, framing and the status quo bias exist among Nigerian investors. A weak negative relation between the biases and stock market performance was also established. Luong & Thu Ha (2011) examines the behavioural factors influencing individual investors' decision-making and performance at the Ho Chi Minh stock exchange. The factors explored were overconfidence, availability bias, herding, and market, prospecting and anchoring. The study concluded that all the factors have moderate impacts on decision making with the market factor having the highest impact. Only three factors have influence on the investment performance, which are herding, prospect and overconfidence.

2.3 Research gap:

It can be observed from the literature that findings of different studies vary. Different findings in different studies might be due to different countries and different demographic profiles, different methodologies applied, different set of variables used for the study and different time periods considered for the study etc. Hence, the influence of behavioral finance theories on individuals' investment performance at the Nigerian stock market needs different and fresh enquiry.

3.0 METHODOLOGY

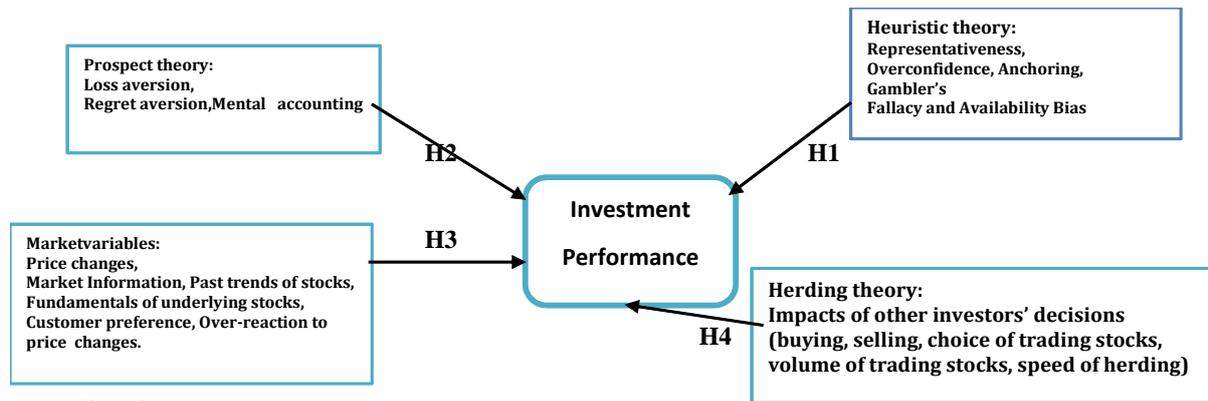
A survey design was adopted for this research work using a structured questionnaire. Hair, Black, Babin, Anderson and Tatham (1998) suggest that with quantitative research, at least 100 respondents should be studied in order to have fit the statistical methods of data analysis. As the research aims at exploring the behavioural finance theories at the Nigerian stock exchange, a relatively large sample size is recommended. The Taro Yamane (1967) table for sample size determination as reviewed by Glenn (1992) was utilised, using a precision level of $\pm 7\%$, 95% confidence level and $P=50\%$ (population

attributes) to determine a sample size of 204. An adequate number (400) of questionnaires were sent to individual investors in the hope of receiving more than 200 responses (i.e. an expected response rate of 50%). The number of questionnaires apportioned to each security company was decided based on its brokerage market share in Nigerian stock market. The questionnaires were sent to brokers of the companies who took responsibility for sending to investors randomly. Due to time constraint, only individual investors from ten leading securities companies were chosen. Although

investors from these ten companies are not the whole population, but they do account for 66.41% of the whole population as at 31/12/2014 which can be considered as representative enough to some extent. However, this could be another limitation for this study. The data collected was analysed by the method of structural equation modelling using AMOS software.

3.1 The research model

Figure 2.2: The research model of behavioural finance theories influencing investment performance of individual investors at the Nigerian stock market.



Source: The authors

4.0 RESULTS AND DISCUSSION

4.1 Assessing the overall measurement model fitness

Table 1 AMOS Output showing model fit

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	70	357.743	281	.001	1.273
Saturated model	351	.000	0	-	-
Independence model	26	4213.874	325	.000	12.966

Source: Authors computations

Table 1 provides a quick overview of the model fit. It shows the X² value (357.743), its degrees of freedom (281) and probability value (.001). NPAR stands for number of parameters, and CMIN (X²) is the minimum discrepancy and represents the discrepancy between the unrestricted sample covariance matrix S and the restricted covariance matrix “k”. Df stands for degrees of freedom and P is the probability value.

In SEM, a relatively small chi-square value supports the proposed theoretical model being tested. In this model, the X² value (357.743) is small compared to the X² value of the independence model (4213.874). Hence, the X² value is good.

Wheaton, Muthen, Alwin and Summers (1977) opined that the X² statistic is sensitive to sample sizes (that is, the probability of model rejection increases with increasing sample size, even if the model is minimally false), as such chi-square (X²) divided by degrees of freedom is suggested as a better fit metric (Bentler and Bonnett, 1980). It is recommended that this metric not exceed five for models with good fit (Bentler, 1995). For the current CFA model, as shown in table 1, X²D df was 1.273 (X²=357.743; df= 281), suggesting acceptable model fit. Other most common measures of model-fit used to assess the model’s overall goodness of fit are shown in table 2.

Table 2 Fit statistics of the measurement model

Fit statistics	Recommended	Obtained
CMIN	-	357.743
df	-	281
X ² significance	p<=0.05	.001
X ² /df	<5.0	1.273
GFI	>.90	.89
AGFI	>.90	.87
NFI	>.90	.92
RFI	>.90	.91
CFI	>.90	.98
TLI	>.90	.98
RMSEA	<.05	.04
RMR	<.05	.04

Table 2 presents the fit statistics of the measurement model. Goodness of fit index (GFI) obtained is 0.89 as against the recommended value of above 0.90, The Adjusted Goodness of Fit Index (AGFI) is 0.87 as against the recommended value of above 0.90 as well. The Normed fit Index (NFI), Relative Fit index (RFI), Comparative Fit index (CFI), Tucker Lewis Index (TLI) are 0.92, 0.91, 0.98, 0.98 respectively as against the recommended level of above 0.90. RMSEA is 0.02 and is well below the recommended limit of 0.05, and Root Mean Square Residual (RMR) is well below the recommended limit of 0.05 at 0.004. This can be interpreted as meaning that the model explains the correlation within an average error of 0.004 (Hu and Bentler, 1990). As can be observed, the GFI and

AGFI are below the recommended level, this might be due to relatively large number of indicator variables in the model, because as noted earlier, GFI is sensitive to sample and large number of indicator variable. Since the other variables are above the recommended threshold, the model shows an overall acceptable fit.

4.2 Assessing structural model fitness

The process of determining the structural model’s validity is the same with guidelines adopted for the measurement model. A new SEM estimated covariance matrix is computed and is different from the measurement model, since the measurement model assumes that all constructs are correlated, but in structural model, the relationships between some constructs are assumed to be zero.

Table 3 Fit indices of the structural model

Fit statistics	Values
X ²	347.459
X ² /df	1.228
df	283
X ² Significance	.05
Goodness of fit index (GFI)	.90
Adjusted Goodness of Fit Index ((AGFI)	.87
Normed Fit Index (NFI)	.92
Relative Fit Index (RFI)	.91
Comparative Fit Index (CFI)	.98
Incremental Fit Index (IFI)	.98
Tucker Lewis Index (TLI)	.98
Root mean Square Error of Approximation (RMSEA)	.03
Root Mean Square Residual (RMR)	.04

Table 3 presents the fit statistics of the structural model. The model fit indices also provide a good model fit for the structural model. The chi-square discrepancy ratio (CMIN/df or X²/df) revealed a good fit with the value 1.228 at a p value of 0.05. Goodness of Fit index (GFI) obtained is 0.90. The Adjusted Goodness of Fit Index (AGFI) is 0.87. The

Normed fit Index (NFI), Relative Fit index (RFI), Comparative Fit index (CFI), Incremental Fit Index (IFI), Tucker Lewis Index (TLI) are .92, .91, .98, .98, and .98 respectively. RMSEA is .03, and Root Mean Square Residual (RMR) is .04. Hence, the proposed research model fits the data reasonably within the acceptable level.

4.3 Testing structural relationships

Table 4 Regression estimates of latent constructs and testing of hypotheses

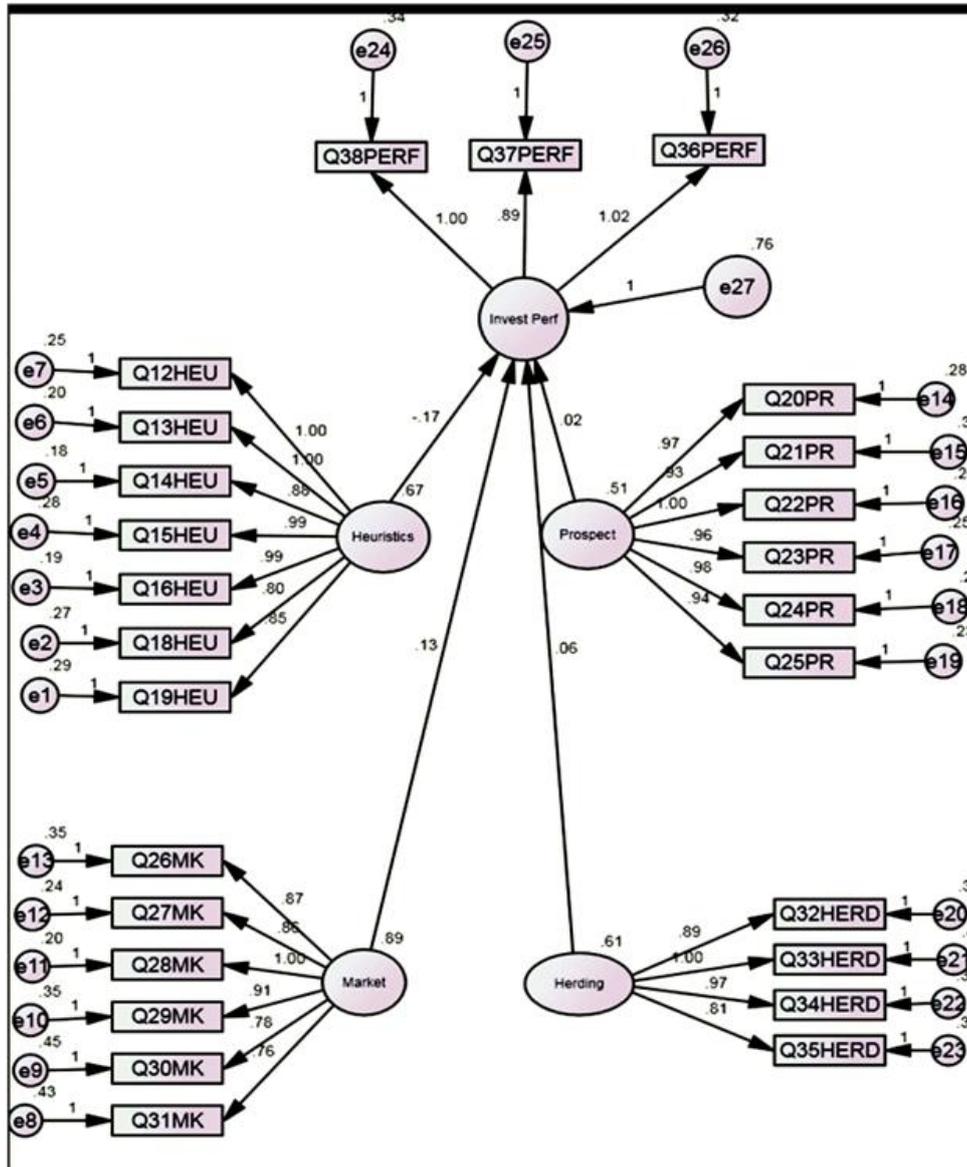
Hypotheses	Path	SEM Output				Result
		Estimate	S.E	C.R	P	
H1: Heuristics theory has a significant impact on individual investors performance at the Nigerian stock market	Heuristics ? Invest perf	-0.170	.083	-2.042	.041	Supported
H2: Prospect theory has a significant influence on individual investors performance at the Nigerian stock market	Prospect ? Invest perf	.026	.096	.266	.790	Rejected
H3: Market variables have significant impact on individual investors performance at the Nigerian stock market	Market ? Invest perf	.125	.072	1.744	.081	Rejected
H4: Herding behaviour has a significant impact on individual investors performance at the Nigerian stock market	Herding ? Invest perf	.061	.094	.648	.517	Rejected

Table 4 presents the AMOS output of the structural relationships. The results of the regression estimate revealed that only heuristics has a significant negative impact on investment performance with regression weight of -.175, and critical ratio (t-value) of -2.042 at p-value of .041. This result implies that when investors increase the use of heuristics and intuitive judgment in making their investment decisions by 1, their investment performance will go down by 0.175. As could be recalled, heuristics are defined as the rules of thumb, which makes decision making easier, especially in complex and uncertain environments (Ritter, 2003), by reducing the complexity of assessing probabilities and predicting values to simpler judgments, that some time lead to bias (Kahneman & Tversky, 1974). The negative impact of heuristics on investment performance could be due to its simplicity in making complex decision of stock trading which lead to bias and consequently affect the trading performance. The findings is consistent with that of Babajide and Adetiloye (2012), who found a strong evidence of overconfidence, loss aversion, framing and the status quo bias among Nigerian

investors and a weak negative relation between the biases and stock market performance.

With regards to the other three theories (market, prospect, and herding), the findings revealed that these theories have positive but insignificant impact on investment performance at the Nigerian stock market, with regression weight of .125, .026 and .061; and critical ratio of 1.77, 0.266 and 0.648; at p-values of .81, .790 and .517 for market, prospect and herding respectively. This implies that there are other stronger factors in stock market that impact greatly on investment performance. The findings show that market, prospect and herding theories have positive impact on investment performance. However, the p-values revealed that the impact is not strong enough to have statistical significance. The findings is consistent (at certain level) with that of Minike, Dunusinghe, and Ranasinghe (2015), who found a positive correlation between investment performance with herding, market, heuristics, and prospect, but found a negative correlation between loss aversion and investment performance in a Colombo stock market.

Figure 2 AMOS graphical output of the hypothesized model



Looking at the model as a whole, the residual error term (e27) shows a value of .76, this could be interpreted as, 76% of investment performance among individual investors at the Nigerian stock market is influenced by other factors outside this model. In another word, this model explains 24% of variance in investment performance. That is, if investment performance increase or decrease by 1 unit, 0.76 is due to other factors outside this model, and therefore this model could explain only 0.24 (1 - 0.76) of individual's investment performance. This finding seems to be strange but consistent with reality. Behavioural finance have evolved out of the traditional finance paradigm to play a complementary role by understanding the issues the traditional finance appears to fail to understand by providing answers to vital questions, such as why does an individual investor trade, how does he perform, and why does returns vary across stocks for reasons other than risk? The 24% variance in the investment performance that this model was able to explain has accounted for such issues that the traditional finance paradigm fails to understand. Looking at the literature on the major determinants of investment performance at the Nigerian stock market, empirical evidence shows that macroeconomic variables were the major determinant that account for 80% to 90% of investment performance (Daasi, Dimoji, Collins, & Sira 2014; Nkechukwu, Onyeagba, & Okoh 2016; Izuchukwu, Ifurueze, & Patricia 2015). These Microeconomic variables include Gross Domestic Products (GDP), oil prices, money supply, exchange rate, interest rate, inflation, index of industrial production, and foreign institutional investment. This was further confirmed by other studies in other stock markets (Charles, 2014; Ouma & Muriu, 2014; Barakat, Elgazzar & Hanafy 2016; and Venkatraja, 2014).

4.4 Contributions of the paper

This research is one of very few studies that investigated the influence of behavioural finance theories on individual investment performance in Nigeria.

The paper attempted to use a full set of behavioural factors to assess their impacts on individuals' investment performance at the Nigerian stock market. While prior studies only consider the impacts of some limited dimensions of behavioural finance theories, for examples, Babajide and Adetiloye (2012); which focus mainly on biases recommended by Mercer consulting in 2006, while Alalade, Okonkwo & Folarin (2014) used only one dimension of the biases.

Besides, the measurements of investment performance in this research are designed to ask the investors to evaluate their own performance based on investment return rate and the level of investment satisfaction. This measurement method is different from prior authors, for example: Lin and Swanson (2003), Kim and Nofsinger (2003) Babajide and Adetiloye (2012), Alalade, Okonkwo & Folarin (2014) and so on, who used secondary data of the aggregate stock market performance.

This study applied sophisticated statistical techniques, i.e., structural equation modelling (SEM) using AMOS v.18. SEM allows simultaneous evaluation of the adequacy of the measurement model and the causal model that was proposed to investigate the extent of influence the behavioural finance theories have on investment performance. In addition, structural model showing empirical support for the interrelationships between the important constructs, contributed to the knowledge in behavioural finance in the context of underdeveloped country stock market.

To the best of our knowledge, none of the previous studies has applied sophisticated statistical techniques i.e. the structural equation modelling using AMOS software to test the extent to which behavioral finance theories impacts on investment performance at the Nigerian stock market.

4.5 Implications of the findings

The findings of this paper have implications for the behavioural finance theories. Behavioural finance has evolved to complement and cover the shortcomings of the traditional finance paradigm, and as such, it leads to the emergence of new perspective in modern financial research in recent times. Its relevance has been established in major developed stock markets in the world such as the USA, Japan, UK and Germany, together with some emerging markets like China, India and Canada. This study is carried out to further establish the relevance or irrelevance of behavioural finance in an under developed stock market based on the Nigerian context, the findings of this study therefore revealed that behavioural finance is still relevant in influencing the market outcomes at Nigerian stock market context. Especially as the theories have both positive and negative consequences on investment performance.

The findings of this study have implication for individual investors. The individual investors can benefit directly from the findings of this study as it makes them aware that these behavioural biases prevails among them while making investment decisions, and also by revealing the implication of each bias tendency on their investment performance. The findings of this study calls for more actions to be taken by the security market operators on the need for enlightenment on general financial literacy to enhance rational decision making in the stock market, and also create more awareness about basic principles of stock market operations. The security operators can use these findings as reference for their analysis and for predicting the trends in the security market. The joint-stock companies, which raise the capital from stockholders, can use the results of this study to have good decisions to attract the investors to buy their stocks.

5.0 RECOMMENDATIONS

The findings revealed that heuristics has negative impact on the investment performance. Therefore, individual investors at the Nigerian stock market should not take decisions based on their intuitive judgment and rule of thumb. Instead, they should consider carefully, the general economic outlook and base their decision on some of the macroeconomic indicators, which are the major determinant of stock investment performance in Nigeria.

Apart from heuristics, herding, market and prospect have positive but insignificant impact on investment performance. Nigerian stock market is not mature and there is no enough reliable information, so individual investors should choose good investment partners or alliance to consider as references for their investment. They can establish forums to support each other in finding reliable information of stock market. The cooperation of a crowd of investors can help them limit the risks and increase the chances to benefit from herding.

Individual investors in the market should allow investment professionals like the stockbrokers to manage their portfolios; this will reduce personal biases in managing the investment. There is need for the Nigerian Stock Exchange to make information about the fundamentals of the traded stocks much more readily available. This will enable investors carry out analysis and take an informed decision about particular stocks.

Although the findings of this study are encouraging and useful, it has some limitations as most field surveys suffer from. First, the data collected for this study was cross-sectional, longitudinal data will be needed in the future to investigate what factors will continue to influence individuals' investment performance over time.

The findings presented here were obtained from a single study that focused only on behavioural finance factors that influence investment decisions and performance, while there are other major factors (like macroeconomic variables) that also influence the investment performance. Thus, another research that combine both behavioural factors and macroeconomic variables is needed to have a comprehensive view of all the factors influencing investment decisions and performance.

As respondents were chosen from ten leading stock brokerage firms, generalization for the whole population is not perfectly fulfilled although random sampling is applied.

The measurement of investment performance through subjective assessment by the investors has some limitations; some investors may not know their own expected return rates for their investments as well as the average return rate of the stock market. There is, therefore, the need for measurements of investment performance to combine the investors' assessment with secondary data of the investors to augment the accuracy of the measurements.

This study is one of the few studies that use SEM and AMOS software for testing behavioural finance theories in Nigeria with the measurements of 5-point Likert scale. It is necessary to have further researches to confirm the findings of this research with the larger sample size and more diversity of respondents.

There is the need to conduct further researches to improve the measurements by incorporating both behavioural finance theories and macroeconomic variables to have a comprehensive view about the impact of each perspective concurrently. The further researches are also suggested to apply behavioural finance to explore the variables influencing the decisions of institutional investors at the Nigerian stock market. These researches can help to test the suitability of applying behavioural finance for all kinds of security markets with all components of investors.

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