

Role of Behavioural Factors in Investment Decisions: A Review of Insights from Heuristic Decision Theory

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Abstract

Contrary to the traditional finance theory founded on the notion of perfect rationality of human actions, behavioural finance operates on the principle of bounded rationality, where in addition to reason, emotions, biases, heuristics and other human behavioural traits and tendencies influence human financial decision making process. These behavioural traits which tend to influence the financial decisions generally, but particularly, the investment decisions of economic agents are numerous. However, they are classified under two main headings: prospect theory and heuristic decision theory. This paper reviewed some behavioural factors influencing investment decisions from perspective of heuristic decision theory. From the review, it was discovered that although heuristics like representativeness, overconfidence, availability, anchoring and adjustment etc., have impact on investment decision but strategies for their identification, recognition and management need to be given proper attention in the financial community, most especially in Nigeria. Thus, the paper suggested that models of decision making should be hybrids of traditional theory of rationality and the tenets of behavioural finance, for this if employed in investment decision, will facilitate the attainment of optimality. Furthermore, more studies in Nigeria should be devoted to the study as well as the management of these heuristics, biases and other aspects of human behavior that have bearing on activities in the investment world.

Keywords: Biases, Behavioural Finance, Heuristic Decision Theory, Heuristics, Investment Decision.

1.0 Introduction

Investment decision, a key decision area in finance, is a complex decision whose impact on the growth and survival of any business organization is fundamental. This decision involves making a choice among various alternative investment options capable of maximising the value of the firms. Investment, according to Babarinde and Bello (2019), is an activity which involves the use of resources in a business, project, securities, in anticipation of returns. Investors in their decisions have several issues to contend with in order to arrive at an optimum decision. These issues/factors include qualitative, behavioural, quantitative, and other factors. Since most investment decisions are made in a world of uncertainty, hence vagaries in these factors tend to reflect in the quality of outcome of the decision.

Contrary to the submission of traditional finance(TF), which postulates that human beings make their investment decision based on perfect rationality devoid of the influence of behavioral factors

like biases and heuristics; behavioural finance (BF), contrarily, recognizes that human behaviours, mood, emotions, are factors capable of affecting their investment decisions (Babarinde and Bello, 2019; Kiyilar and Acar, 2009). Thus, human decisions are subject to several cognitive and emotional illusions which for instance, reflect in the financial decision-making process generally, and specifically in their investment behavior (Babarinde and Bello, 2019; Babarinde and Kazeem, 2019). Singh (2012) argues further that biases and heuristics cannot be separated from human decision-making processes and they tend to distort market behavior as well.

Broadly, behavioural factors influencing financial decisions have been grouped in to Prospect-based factors and heuristic-driven factors (Kannadhasan, 2015; Waweru, Mwangi and Parkinson., 2014). Chandra (2008) submits that prospect theory basically which describes how people frame and value a decision under the condition of uncertainty. Four key elements of the theory pinpointed by Babarinde and Bello (2019) are mental accounting, loss aversion, regret aversion and self-control. Therefore, in line with the two broad classification of behavioural factors, all other factors other than prospect-based factors could be termed heuristic factors. Generally, many studies have been carried out on investment, based on the traditional finance theory, without taking cognizance of the influence of human behavioural factors whether prospect-based or heuristic-driven factors (Adaramola, 2012; Gidigbi, Babarinde and Lawan, 2018; Izedonmi and Abdullahi, 2011; Mohan and Chitravedi, 2014).

The failure of these studies to discount biases and heuristics in their investigation is a subject of concern, considering the fact that human beings are not made up of reason but are also bundles of emotions and other behavioural traits, which tend to affect everything they do including making of financial decisions like investment. Although past studies have been carried out behavioural factors via the lens of prospect theory (Babarinde and Bello, 2019; Cohen, 2015; Kahneman and Tversky, 1979; Kannadhasan, 2015; Thaler and Shefrin, 1981; Sherif, 2016). However, some other studies carried on behavioral factors failed to treat prospect theory and heuristic theory separately in their investigations (Alquraan, Alqisie and Al-Shorafa, 2016; Antony and Joseph, 2017; Aren and Canikli, 2018; Javed and Marghoob, 2017; Kamau, 2012; Lad and Tailor, 2017; Masomi and Ghayekhloo, 2011). Therefore, heuristic factors, being a blanket of all other factors other than prospect based factors, is considered important and worthy of separate and focused investigation.

To fill this perceived gap in literature, this study is handy. Therefore, this paper reviewed some behavioural factors affecting investment decision of with a focus on heuristic decision theory. This aim at clarifying and further popularising the concept of heuristics as well as encouraging the need for investors discount these factors in their investment decisions, if necessary and more importantly to provoke further researches on the subject matter on the shore of Nigeria, where studies on the subject matter appears to scanty. The balance of this paper is organized as follows. Conceptual issues review follows this section, after which the heuristic theory is examined. The subsequent section reviewed the heuristic decision behavioural factors affecting investment decision. Finally, conclusion and policy suggestions were made.

2.1 Conceptual Issues

2.1.1 Behavioural Finance: Finance is a dynamic field of study. Research in the field have been classified by Arora (2015), in to three strands, namely, theoretical finance, empirical finance, and behavioral finance. The author explained further that while theoretical finance entails the study of

logical relationships among assets; empirical finance is concerned with the study of data in order to make inferences among relationships among financial variables. Behavioral finance is an aspect of financial research which incorporates psychology into the investment process. Figure 1 is illustrative of these three sub fields of financial research.

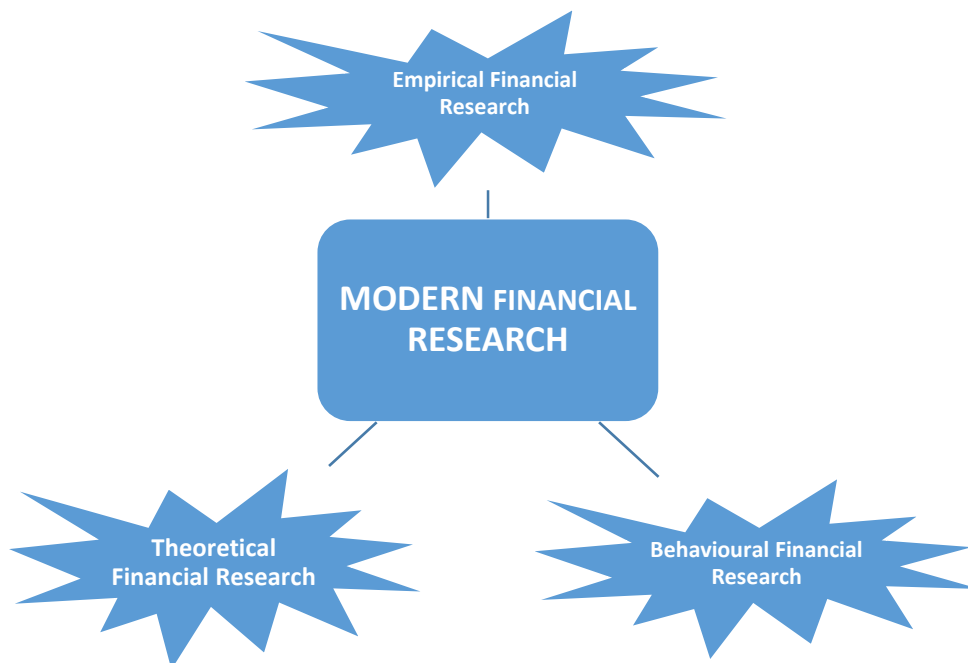


Fig 1: Classification of Modern Financial Research

Source: Formulated from Arora (2015).

BF evolved in the 1980s because of the limitations of the existing modern financial theories, most especially lack of the unrealistic assumptions human behaviour underpinning the models employed (McMahon, 2005). Since BF deals with the study of the influence of psychological, cognitive, emotional, cultural and social factors on financial decisions of individuals, firms, entities and markets (Babarinde and Kazeem, 2019), thus the study of behavioural tendencies of individuals in their financial decision making process, constitutes a cardinal subject matter of BF.

2.1.2 Human Behaviour: Behaviour refers to what has been described as the range of actions and mannerisms by individuals, organisms, systems, or artificial entities in conjunction with themselves or their environment. It may also be described as the reaction of individuals or groups of persons to internal and external stimuli (Wikipedia, 2019). According to Babarinde and Bello (2019), human behavior refers to the totality of all actions, inactions, reactions, and internal experiences of human beings as they interact and relate with the society, others, objects and themselves. Behavior has been categorized into three classes (Kiyilar and Acar, 2009; Babarinde and Bello, 2019), namely overt, covert and a blend of both. A behaviour is said to overt when observable actions are displayed in the form of speaking, walking, gestures. Covert behaviors are not directly observable but usually experiential, internal expressed in form feeling, thinking, understanding (Babarinde and Bello, 2019).

2.1.3 Investment: Investment refers to the acquisition of assets for the purpose of income generation and capital appreciation. It is the sacrifice of present consumption and commitment of present savings for a period of time in return for a compensating higher level of consumption in the future. It is the commitment of scarce resources for a period of time to derive returns that compensates for the time the resources are committed, the expected inflation rate and the uncertainty of the future return (Nwude,2018). Bodie, Kane and Marcus (2011) also describe investment as the current commitment of money or other resources in the expectation of reaping future benefits.

Investment could be short term investment, medium term investment or long term investment. Investment, whose maturity is for a maximum of one year may be regarded as short term investment; and any investment which matures between 1 to 5 years may be considered as medium term investment. Long term investments are investments maturity period exceeds five years (Babarinde, Muhammad and Abiodun, 2015). Similarly, investment could also be classified as either real or financial. The former refers to commitment of resources in long term capital assets that are tangible like investment in machinery, plants, furniture while the latter means investment in securities like bonds, shares, stocks, debentures and other financial assets which are not tangible (Bababrinde and Bello, 2019).

It therefore implies that all the covert and overt actions, reactions of human beings can be regarded as human behavior. Since investment decision is one of the decision areas in finance, others are financing decision, liquidity decision, dividend decision. Hence, investment decision could also be termed as part and parcel of human behavior. This is because investment entails the action, reaction and process of committing scarce productive resources into a business, project, programme, activities, ventures, products, security in anticipation of returns in the form of capital growth and income.

2.2The Heuristic Decision Theory

Basically, the term heuristics refers to rules-of-thumb, simple and approximate rules, guiding procedures, shortcuts or strategies that are employed to solve problems and make decision especially in the face of composite, complex or uncertain environment (McMahon, 2005; Ritter, 2003). It is the process by which people find things out for themselves, usually by trial and error which often lead them to develop rules of thumb (Kannadhasan, 2015; Shefrin, 2000). In the same vein, Wikipedia (2020) defines heuristics as a problem solving approach or self-discovery that which employs practical but not perfect methods, to achieve immediate or short term goals, which may not be necessarily optimal. In other words, the rules of thumb or mental shortcuts that help people in reaching decisions quickly and easily are termed heuristics (Prosad, Kapoor and Sengupta, 2015). These shortcuts may be helpful, but can also result in erroneous decisions (Kannadhasan, 2015; Prosad, *et al.*, 2015; Shefrin, 2000).

Heuristics are efficient rules followed by people often to form judgments and make decisions that normally involve focusing on one aspect of a complex problem and ignoring others. These rules work well under most circumstances, but they may differ from common logic, probability or traditional rational choice theory (Virigineni and Rao, 2017).In 1947, Herbert A. Simon postulated the Heuristic decision theory. The centerpiece of his book “Administrative Behaviour” is the behavioural and cognitive processes of human making rational decisions. To him, human, rather than being completely rational, operates on the basis of bounded rationality(Wikipedia, 2020).

Tversky and Kahneman (1974) further developed the theory. They examined three concepts of adjustment and anchoring, representativeness and availability. Thereafter, other scholars have investigated the theory further. For instance, Virigineni and Rao (2017) stated that under the heuristic decision theory, an investor's decision-making process is affected by five different biases based on uncertainty and risk. These biases according to them are overconfidence, representativeness, anchoring, herd behavior and hindsight bias.

2.3 Behavioural Factors Affecting Investment Decisions

Biases are dispositions, illogical preference, or prejudice, perception, or predisposition towards an error. Heuristics simply means mental short cut to make decision quickly. While former normally results in errors, the latter may or may not result in errors. In this study, so far heuristics may lead to biases, then both are examined under the heuristic decision theory. The heuristic based factors reviewed in this study are: representativeness, availability, anchoring and adjustment, belief perseverance, overconfidence, illusion of control, self-attribution bias, conservatism, recency bias, herding, counter factual thinking, familiarity, cognitive dissonance, excessive optimism, planning fallacy, gambler's fallacy, hindsight bias, and sunk cost fallacy.

2.3.1 Representativeness: This refers to the human tendency to form judgment, opinion, or conclusion based on stereotypes, limited information like being excessively optimistic about past winners but overly pessimistic about past losers (Chandra, 2008; Elton, Gruber, Brown and Goetzman, 2007; Sherif, 2016). It can also be described as the human tendency to estimate the likelihood of an event by comparing it to a previous incident that already exists in their minds. It makes individuals assess their options by comparing its similarity with an existing prototype (Prosad, *et al.*, 2015). In this heuristics, judgments are made on the basis of how well circumstances represent or match particular stereotypes that have emerged from past experience (McMahon, 2005; Sherif, 2016). Representativeness manifests when investors equate good companies with good stocks, and overly optimistic about past winners and overly pessimistic about past losers (Chandra, 2008; Sherif, 2016).

Therefore, representativeness is the phenomenon that make people look for a pattern in a series of random events. This means the fallacy of composition of taking a sample of an investment as the population (portfolio) in decision making by imparting the properties in a unit into the sum whole. Hence, if one stock in an industry yields high returns, representativeness, makes one to conclude all the stocks with similar features are good stocks with high yield.

2.3.2 Availability: Availability, according to Sherif (2016) refers to the tendency of available examples to exert more influence on investor's decisions. Accordingly, if investors have in the recent time seen huge loss in one investment vehicle, therefore they will be unwilling to invest in that particular investment. In other words, availability basically connotes recent memory. Hence, events that occur more frequently, are more recent, are more salient, are more vivid, are more dramatic, and are easier to recall (McMahon, 2005; Arora, 2015). In this case, people evaluate the probability of an outcome based on the familiarity or prevalence of that particular outcome. This makes individuals to give more weight age to recent information which could be recalled easily (Prosad, *et al.*, 2015).

2.3.3 Anchoring and Adjustment: This was described as the use of irrelevant information as a reference for evaluating or estimating some unknown value or information. When anchoring,

people base decisions or estimates on events or values that are known to them, even though these facts may have no bearing on the actual event or values (Arora, 2015). Anchoring also refers to the human habit of making estimates by starting at a certain initial value (the anchor) and then adjusting it in consonance with additional information to arrive at the final answer (Prosad, *et al.*, 2015; Valsová, 2016). According to Sherif (2016), anchoring is a psychological situation which exists when investors give undue importance to statistically random and psychologically determined anchors which lead them to investment decisions that are not essentially rational. Furthermore, Lad and Tailor (2017) also assert that in anchoring and adjustment, when people are asked to estimate some value, they start with some number (an anchor) and then gradually adjust it up and down to reflect the new updated information. This occurs because relative analysis and comparison is easier than absolute one.

2.3.4 Belief Perseverance: Also called confirmation bias, belief perseverance is the tendency for information that is in harmony with an individual's current beliefs to be noticed, processed and remembered more readily than information that contradicts current beliefs. Therefore, positive, confirming evidence is weighed more heavily than negative, disconfirming evidence with respect to given alternatives (McMahon, 2005). This makes individuals prone to drawing conclusions first and then seeking out the facts or associations that support those conclusions. It is one of the reasons people tend to gravitate to those who share their views, tastes, and interests (Wilmington Trust, 2017).

2.3.5 Overconfidence: Overconfidence is the tendency of individuals to overestimate one's knowledge, skills and capability to control a situation and the underestimation of risks of that situation (Prosad, *et al.*, 2015; Valsová, 2016; McMahon, 2005). Human beings tend to be over confident in their decision making and this makes them to overrate the accuracy of their views of the future by viewing the world in positive terms (McMahon, 2005). Overconfidence usually stems from illusion of knowledge, illusion of control, attribution bias and the tendency to focus on future plans rather than past experiences (Chandra, 2008). Similarly, the overconfidence bias is also variously attributed to the anchoring and adjustment and the availability heuristics and to self-attribution, hindsight and confirmation biases (McMahon, 2005). Thus, overconfidence leads to increase in trading volume, but a loss in the market reduces overconfidence level and subsequently the transaction volume (Prosad, *et al.*, 2015). Therefore, overconfidence is the tendency in individual to have an over-bloated, unreasonable and unwarranted estimation of his/her abilities in the face of decision making under uncertainty or in the execution of certain activities, such as investment and other financial decisions.

2.3.6 Illusion of Control: This is the bias of believing that you are having full control over your situation, circumstances, decision without the need for external information or collaboration. Arora (2015) explains illusion of control, as the people's belief that they have influence over the outcome of uncontrollable events. According to McMahon (2005), individuals exhibiting this illusion have a greater expectancy of success than objective probability would suggest because they believe their skills are more highly developed than those of others. Thus, an illusion of control can contribute to an excessive optimism bias (McMahon, 2005). This illusion makes individuals to believe that they can control the results of facts or at least affect them which in real sense, they cannot control or affect (Arenand Canikli, 2018).

2.3.7 Self-attribution Bias: Also called self-serving bias, self-attribution bias refers to the strong tendency of most individuals to attribute success to internal causes such as their own skill, sound judgment or hard work; and to attribute unsuccessful outcomes to external causes such as factors beyond their control, the actions of others or bad luck. (McMahon,2005). It means that individuals faced with positive outcome following a decision will consider that outcome as a reflection of their ability and skill but when faced with a negative outcome, this is attributed to bad luck or misfortune (Byrne and Utkus, 2013). For instance, this bias makes investor to attributes favourable outcome of their investments to their personal abilities and skills while they hold others person or bad luck responsible for any negative returns.

2.3.8 Conservatism: Also called status quo, conservatism represents that the investor takes decision on the basis of his past information although faced with the new information or investor only partially adjust their view in the light of new information (Sherif, 2016). That is, when things change, people tend to be slow to pick up on the changes. They anchor on the ways things have normally been. This bias varies inversely with the representativeness bias. Put differently, when things change, people might under react because of this bias. However, if there is a long enough pattern, then they will adjust to it and possibly overreact, underweighting the long-term average (Singh, 2012). This bias implies that people are comfortable with the familiar and would like to keep things the way they have been (Chandra, 2008). Thus, people affected by this bias prefer to maintain their current position, irrespective of the change in their environment (Prosad, *et al.*, 2015).

2.3.9 Recency Bias: This bias makes investors put too much weight on current events or data and not enough weight on past events. It is a tendency of people to give more prominence to more recent data. Recency bias involves a shorter, more recent time frame than representativeness. Bodie *et al.* (2011) also described this bias as memory bias, that is, the tendency for people to give too much weight to recent experience compared to prior beliefs and experience when making forecast which makes them to make forecast that are too extreme given uncertainty inherent in their information.

2.3.10 Herding: Herding, also known as herd behavior, simply refers to the propensity of people to follow the crowd in financial/investment decision. It relates to the tendency to jump on the band wagon while making financial decisions such as investment decision, instead of careful, objective and rational evaluation of the decision. For instance, some investors do buy certain stocks because everyone else is buying it. (McMahon,2005; Prosad, *et al.*, 2015; Valsová, 2016). Therefore, one is said to be herding when one follows financial trends, fads or fashions established by others, rather than making personal/independent judgments(McMahon,2005).Therefore, herding makes investors to act in line with the “majority-carry-the-vote” slogan when making their investment decisions.

2.3.11 Counterfactual Thinking: This is a thinking pattern that is contrary to facts and actual evidence. McMahon (2005) describes it as a mental simulation of events which tends to make individuals dwell on the past, imagining what might have been if they had made different decisions or acted differently or if the circumstances had been different. This makes individual to focus on outcomes of imagination better than the reality (McMahon, 2005). The author states further that counterfactual thinking helps an individual to get insights into the factors capable of improving performance by suggesting better strategies, increasing the expectation of positive results, and

increasing feelings of personal control. However, it can result in feelings of disappointment and regret which affect the individual's perceptions of past achievements and future opportunities.

2.3.12. Familiarity: This is the tendency of people to prefer things that are familiar to them. For instance, investors prefer to invest in securities that they are familiar with than investing in those they are not having idea of. This is based on the belief that a known devil is better than an unknown angel. This heuristic makes us to believe that 'like causes like' and 'appearance equals reality' (Sewell, 2010). Familiarity for instance, breeds investment. Thus, some people tend to invest more in the securities of their employer company, local companies, and domestic companies (Chandra, 2008). Familiarity is acting in consonance with the age long maxim: "A known devil is better than an unknown angel". A well-known company though performing not too handsomely in terms of returns will still be preferred by investors with familiarity bias, instead of investing in a new or unknown companies with greater prospect of more handsome future returns.

2.3.13 Cognitive Dissonance Bias: This is the mental conflict or a feeling of unease, stress or discomfort that people experience when they are faced with new evidence or information their beliefs or assumptions are incorrect (Valsová, 2016). Therefore, cognitive dissonance tries to explain how come people do things which they know to be bad or somehow not in correlation with their perception of their ego (Schiller, (2012) as cited in Karlsson, Milde and Viktorsson (n.d.)). The desire to avoid cognitive dissonance can thus lead to a repetition of mistakes and decisions that were bad in the first place (Valsová, 2016). Festinger (1957) in his theory of cognitive dissonance, argues that when faced with this bias, that there are two ways to approach such a scenario, one could simply change the behavior, or change the way one thinks about it.

2.3.14. Excessive Optimism: This is exhibited when an individual overestimates the probability of a positive outcome and/or underestimates the probability of a negative outcome. As a result, most people have unrealistically better views of their abilities and prospects, and they are therefore excessively optimistic about future events. Excessive optimism is associated with the tendency of individuals to have a high personal regard for their own abilities or competence, regardless of objective evidence to the contrary (McMahon, 2005). Optimism (pessimism) is responsible for setting the mood of the financial markets. This bias is so influential that it can create stock market bubbles and can convert even pessimists to optimists and vice versa (Prosad, *et al.*, 2015).

2.3.15. Gamblers Fallacy: This basically refers to the illogical thought that a certain random event is less likely to happen again if it has already happened. This irrational thought is due to the fact that past random events do not change the probability that future events occur (Phung (2017) as cited in Karlsson *et al.* (n.d.)). It arises when the investors inappropriately predict that trend will reverse. It may result in anticipation of good or poor end (Kannadhasan, 2015). This illusion may encourage the purchase or sale of a share on the grounds that the recent bad/good luck of the firm will reverse (Singh, 2012).

2.3.16 Planning Fallacy: This bias refers to the general tendency of individuals to overestimate the amount that they can achieve in a specific time; or alternatively, underestimate the amount of time that will be necessary to complete a specific task. The planning fallacy arises because individuals tend to ignore past situations and experiences with similar characteristics when making predictions about future outcomes. They are also inclined to treat the current situation as if it is unique and full of uncertainties, thus rendering past situations and experiences irrelevant (McMahon, 2005). Planning fallacy therefore could be regarded as a specific form of optimistic bias,

where an individuals are overly optimistic about the time of completion of an activity, a project, a business, or undertaking, etc.

2.3.17 Hindsight Bias: This bias arises from the tendency of individuals to believe, after an outcome has occurred, that they had been able to foresee it happening. Past events are seen as more predictable than they actually were. Hindsight bias may make it more difficult for individuals to admit their mistakes, thereby hindering learning from experience. After all, if they could have forecast negative outcomes, why did they not do something to avoid them (McMahon, 2005).

2.3.18 Sunk Cost Fallacy: Sunk costs have already been incurred and are irrecoverable and remain fixed but they still influence human behavior (Wilmington Trust, 2017). Sunk cost fallacy takes place when individuals allow their choices between future alternatives to be influenced by sunk costs. Sunk costs tends to increase an individual's aspiration level – the outcome anticipated in accordance with inputs. Those who have invested in sunk costs perceive outcomes below the aspiration level as being more negative. Sunk costs also cause individuals to be more risk-seeking than they would have been if they had not incurred these costs (McMahon, 2005). A common example of this biases is having tickets to a sporting event, but for some reason the desire to attend the game no longer exists. Most individuals will attend anyway if they paid for the tickets versus if they were a gift (Wilmington Trust, 2017).

2.4 Heuristics and Investment Decision

In reality, where imperfections and uncertainties exist, emotions, cognitive illusions, biases heuristics and other behavioral traits do sometimes affect human decision making process, either overtly or covertly. Hence, according to Babarinde and Bello (2019), BF studies these psychological factors as well socio-cultural influences on financial decision under the assumption of bounded-rationality. They further opined that BF does not postulate principles that will eradicate emotions, heuristics and biases, but what it does is to suggest strategies of managing them so as to make prudent financial decisions. Therefore, an attempt to ignore human behavioural tendencies, biases, heuristics in investment decision making could prove costly to both the individual investors and the entire market. Consequently, investment decision, will be made better when the traditional finance principles are embraced and additionally incorporate taking cognizance of BF. This line of thought is shown Figure 2.

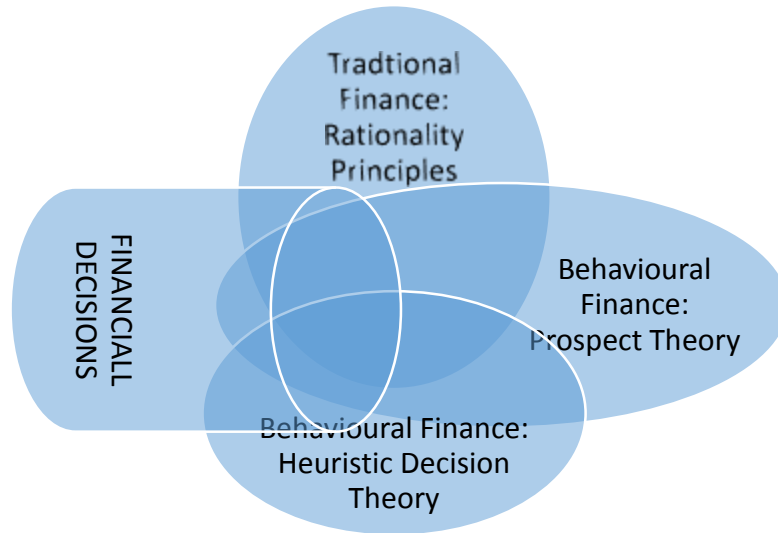


Fig 2: Nexus Between Financial Decisions and Behavioural Factors

Source: Author’s formulation from literature (2020).

Shown in figure 2 is a financial decision model where both TF and BF theories, tenets and principles are combined in the making of financial decisions by individuals, firm and entities. Financial decisions here include financing decision, investment decision, liquidity decision, profit planning, dividend decision. Thus, in financial decision making process, individuals who relies purely on the pure rationality principle of the TF, without discounting the influences of bias, heuristics and other behavioural tendencies in human beings, as advocated in BF, may not be making a real-life optimal decision. This calls for the need for investors should be aware of and put in place mechanisms for the control of various biases and heuristics. Figure 3 presents the summary of the various heuristics, reviewed in this paper.

HEURISTIC DECISION THEORY																	
Representativeness	Availability	Anchoring and Adjustment	Belief Perseverance	Overconfidence	Illusion of Control	Self-attribution Bias	Conservatism	Recency Bias	Herding	Counter Factual Thinking	Familiarity	Cognitive Dissonance Bias	Excessive Optimism	Gambler’s Fallacy	Planning Fallacy	Hindsight Bias	Sunk Cost Fallacy

Figure 3: Heuristic-Driven Behavioural Factors Affecting Investment Decision

Source: Author’s compilation from literature (2020).

Furthermore, in addition to theoretical postulates examined above, empirically studies have also confirmed the influence of behavioural factors in human financial decisions. Specifically, Antony and Joseph (2017)'s study confirmed that overconfidence bias, representative bias, regret aversion, mental accounting, and herd behavior are among the behavioural factors affecting investment decision. Similarly, Joo and Durri (2017) discovered that pessimism, overconfidence in individual investors are negatively correlated with rationality. In a related study, Javed and Marghoob (2017) revealed that market factors, overconfidence factor, prospect factors, anchoring factor and behavioural factors are important factors affecting investment decision making. Furthermore, Kamau (2012) also confirmed herding effect and anchoring effect on investment decisions at the Nairobi securities exchange. In another study, Masomi and Ghayekhloo (2011) found that representativeness, overconfidence, anchoring, gambler's fallacy, loss aversion, regret aversion and mental accounting, affected the decisions of the institutional investors operating at the Tehran Stock Exchange.

3.0 Conclusion and Policy Suggestions

The paper reviewed behavioural factors influencing investment decision from the lens of the heuristic decision theory. Heuristic-based factors are a blanket of all behavioural factors other than the prospect-based factors, that could affect financial decision generally and investment decision in particular. The following heuristics are examined in this study: representativeness, availability, anchoring, belief perseverance (confirmation bias), overconfidence, illusion of control, self-attribution bias, conservatism, recency bias, herding, counterfactual thinking, familiarity, cognitive dissonance, excessive optimism, planning fallacy, gambler's fallacy, hindsight bias and sunk cost fallacy.

It can be inferred from the review that both theoretical and empirical findings are in agreement, that we cannot do away with the influence of behavioural factors in our financial decision making process generally, and most especially in our investment decisions. However, the proper management of these traits in investment decisions has not reached the desired level to fully harness the benefits of their proper management and control.

Therefore, the paper offers the following policy suggestions:

- (i) Models of investment decision making should be hybrids of traditional theory of rationality and the tenets of behavioural finance, for if employed in investment decisions, will facilitate the attainment of optimality in investment decision;
- (ii) Similarly, more studies by researchers in Nigeria, should be devoted to the study of, as well as the management of these heuristics, biases and other aspects of human behavior that have bearing on activities in the investment world;
- (iii) Furthermore, diversification; partnership in investment; knowledge acquisition on human and financial psychology; exercise of control over investment; constant review of biases, and other strategies should put in place by investors. These strategies, if properly implemented will assist investors, in the proper control and management of the heuristics, biases and other behavioral factors in their financial decisions, particularly, investment decision.

References

- Adaramola, A. O. (2012). Exchange rate volatility and stock market behaviour: The Nigerian experience. *Research Journal of Finance and Accounting*, 3(3), 88-96.
- Alquraan, T., Alqisie, A. and Al Shorafa, A. (2016). Do behavioral finance factors influence stock investment decisions of individual investors? Evidences from Saudi stock market. *American International Journal of Contemporary Research*, 6(3), 149-159.
- Aren, S. and Canikli, S. (2018). *Typology of behavioural biases and heuristics*. 14th International Strategic Management Conference.
- Antony, A. and Joseph, A. I. (2017). Influence of behavioural factors affecting investment decision- An AHP analysis. *A Journal of Management Research*, 16(2), 107-114.
- Arora, K. (2015). Behavioral finance: An insight into investor's psyche. *IOSR Journal of Economics and Finance*, 1, 41-45.
- Babarinde, G. F. and Bello, K.B. (2019). Behavioural factors affecting investment decision: prospect theory approach. *Nigerian Journal of Accounting and Finance*, 11(1), 1-10.
- Babarinde, G. F. and Kazeem, A.B. (2019). Behavioural finance: A review of concepts, theories and principles. *Mautech Journal of Economic Studies*, 3(1), 1-11.
- Babarinde, G. F., Muhammad, A. A., and Abiodun, M. (2015). *Investment appraisal techniques in the Nigerian banking industry: A theoretical approach*. M.Sc. seminar paper, university of Ilorin.
- Bodie, Z., Kane, A. and Marcus, A. J. (2011). *Investments and portfolio management*. New York: The McGraw-Hill.
- Byrne, A. and Utkus, S.P. (2013). *Understanding how the mind can help or hinder investment success*. UK: Vanguard Asset Management.
- Chandra, P. (2008). *Investment analysis and portfolio management*. New Delhi: Tata McGraw Hill Education.
- Cohen, P. (2015). *The critical implications of prospect theory*. Retrieved from <http://www.paulcohen.com/the-key-implications-of-prospect-theory/>
- Elton, E. J., Gruber, M. J., Brown, S. J. and Goetzman, W. N. (2007). *Modern portfolio theory and investment analysis*. NJ: John Wiley and Sons.
- Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford: Stanford University.

- Gidigbi, M. O., Babarinde, G. F. and Lawan, M.W. (2018). Inflation and exchange rate volatility pass-through in Nigeria. *Journal of Management, Economics, and Industrial Organization*, 2(3),18-40.
- Izedonmi, P.F. and Abdullahi, I. B. (2011). The effects of macroeconomic factors on the Nigerian stock returns: A sectoral approach. *International Journal of Financial Economics and Economics*, 3(2), 201-208.
- Javed, M. A. and Marghoob, S. (2017). The effects of behavioural factors in investment decision making at Pakistan stock exchanges. *Journal of Advanced Research in Business and Management Studies Journal*, 7(1), 103-114.
- Joo, B. A. and Durri, K. (2017). Influence of overconfidence, optimism and pessimism on the rationality of the individual investors: An empirical analysis. *Pacific Business Review International*, 9(12), 7-13.
- Kahneman, D. and Tversky, A. (1979). Prospect theory: An analysis of risk under risk. *Econometrica*, 47(2), 263-292.
- Kamau, W. M. (2012). *The effect of behavioural factors on investment decisions at the Nairobi securities exchange*. M.Sc. project, university of Nairobi.
- Kannadhasan, M. (2015). *Role of behavioural finance in investment decisions*. Retrieved from: <https://www.researchgate.net/publication/265230942>.
- Karlsson, L., Milde, A. and Viktorsson, A. (n.d.). *Behavioral finance*. Reading Project. Chalmers, 1-10.
- Kiyilar, M. and Acar, O. (2009). Behavioural finance and the study of the irrational financial choices of credit card users. *Annales Universitatis Apulensis Series Oeconomica*, 11(1), 457-468.
- Lad, C. J. and Tailor, H. R. (2017). An empirical study on cognitive biases affecting investment decision with special reference to Valsad District. *International Journal of Latest Engineering Research and Applications*, 2(11), 1-8.
- Masomi, S. R. and Ghayekhloo, S. (2011). *Consequences of human behaviors' in economic: The effects of behavioral factors in investment decision making at Tehran Stock Exchange*. 2010 International Conference on Business and Economics Research, Malaysia.
- McMahon, R. G. P. (2005). *Behavioural finance: A background briefing*. School of Commerce Research Paper Series, Finders University, South Australia, 05-09.
- Mohan, C. and Chitravedi, M. (2014). Impact of inflation and exchange rate on stock market performance in India. *Indian Journal of Applied Research*, 4(3), 230-232.
- Nwude, E. C. (2018). *Investment analysis and portfolio management*. Enugu: El'demak.

- Prosad, J. M., Kapoor, S. and Sengupta, J. (2015). Theory of behavioral finance. In Z. Copur. [Ed.]. *Handbook of research on behavioral finance and investment strategies: Decision making in the financial industry: USA: IGI Global.*
- Ritter, J. R. (2003). Behavioral finance. *Pacific-Basin Finance Journal*, 11(4), 429-437.
- Sewell, M. (2010). *Behavioral Finance*. Cambridge: University of Cambridge.
- Shefrin, H. (2000). *Beyond greed and fear: Understanding behavioral finance and psychology of investing*. New York: Oxford University.
- Sherif, M. (2016). *Classical finance vs behavioural finance: A new paradigm*. Retrieved from: <https://www.researchgate.net/publication/311970631>
- Singh, S. (2012). Investor irrationality and self-defeating behavior: Insights from behavioral finance. *The Journal of Global Business Management*, 8(1), 116-122.
- Thaler, R. and Shefrin, H. (1981). An economic theory of self-control. *Journal of Political Economy*, 89(2), 392-410.
- Tversky, A. and Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Econometrica*, 185(4157), 1124-1131.
- Valsová, D. (2016). *Behavioral finance and its practical implications for investment professionals*, (B.A. thesis). State University of New York, Empire State College.
- Virigineni, M. and Rao, M. B. (2017). Contemporary developments in behavioral finance. *International Journal of Economics and Financial Issues*, 7(1), 448-459.
- Waweru, N. M., Mwangi, G. G. and Parkinson, J.M. (2014). Behavioural factors influencing investment decisions in the Kenyan property market. *Afro-Asian Journal of Finance and Accounting*, 4(1), 26-49.
- Wilmington Trust. (2017). Behavioral finance: Emotions and investment choices. *Investment Insights*, 1-7.
- Wikipedia (2020). *Heuristic*. Retrieved from <https://en.m.wikipedia.org/wiki/Heuristic>
- Wikipedia (2019). *Behavior*. Retrieved from: <https://en.m.wikipedia.org/wiki/behaviour>