

**RELEVANCE OF BEHAVIOURAL FINANCE IN INVESTMENT  
DECISIONS**

*A project report submitted in fulfilment of the requirement for the*

Summer Research Fellowship Programme 2017

Submitted by

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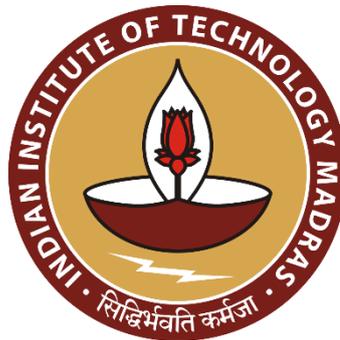
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M.A. Economics

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Under the guidance of

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**DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES**

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**Certificate**

This is to certify that **Ms. Thorupunuri Mounika (HS17SFP0023)** pursuing Master of Arts (M.A.) Economics at University of Hyderabad, underwent a two months Summer Fellowship Programme-2017 at the Indian Institute of Technology Madras, Chennai, in the Department of Humanities and Social Sciences, under my guidance. This report titled “**Relevance of Behavioural Finance in Investment Decisions**” was prepared as a requirement for the completion of the programme.

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**Abstract**

It was during a lecture that I have attended by Dr. Ghanti Subramanyam, I was introduced to the field of Behavioural Finance. Since then lot of questions kept pondering in my head as in what way psychologists are involved in finance and the debates of the lecture. Since it is an emerging field that studies how psychological factors affect decision making under uncertainty, this project seeks to find the influence of certain identified behavioral finance concepts (or biases) and its consequences on investment decisions of investors as well; namely, Overconfidence, Representativeness, Herding, Anchoring, Cognitive Dissonance, Regret Aversion, Gamblers' Fallacy, Mental Accounting, and Hindsight Bias, on the decision-making process of individual investors. To study the behavioural biases and its effects, few empirical papers of different stock markets were considered. As an analyst I tried to look at how biases have been captured and the methodologies used to carry the research in order to find the effects of biases on investment decisions.

**KEY WORDS:** Behavioural Finance, Behavioural Biases, psychologists, Investors, Decision-making, Investment

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## Behavioural Finance

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Thorupunuri Mounika

Place: Chennai

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## **INTRODUCTION**

Field of economics, fundamentally, is about decision making as to what to produce, how to produce and for whom to produce. Similarly, behavioural finance, an emerging field of economics is of no exception to this complex activity of decision making. Though field of economics has contributed many theories on human behaviour over the years, it could not explain why people sometimes take irrational financial decisions. There are studies in the field of finance that provides us with explanations and proofs as to how the way financial markets operate. At the same time they also make us understand the dynamics behind investments upon which many rules have been developed which seem to be simple while investors face trouble in applying. Due to this difficulty of applying rules and balancing emotions; investors either trade too much, buy or sell at precisely the wrong times, allow emotions to overrule logic, misjudge probabilities, or futilely chase performance.

Investors are faced by a challenging task in the area of investment decision, because an ideal investment decision (most advantageous) plays an active role to get best of investments. In that process, choosing a particular alternative among the existing number of alternatives is decision making, for which proper evaluation of the existing alternatives has to be followed up. In today's competitive business world, in order to compete, one has to update and equip themselves in multidimensional fields to attain desired results and goals. To get better insight of this, understanding human nature in the present global perspective, and development of fine skills and ability can get best out of investments. So, for the process of understanding, there has been a rapid development in the last century in the concept of Finance.

Most economic theories have been founded on the premise that people act rationally in the face of economic events and consider all events, and consider all available information (the basis of Efficient Market Hypothesis is this premise). It is based on this that theories and concepts of economics and finance are built upon. Traditionally, economics and finance have focused on models that assume rationality, and the traditional finance model dominated the field of finance. During mid-1950s Modern Portfolio Theory was developed, which was followed by emergence of financial models that played significant role in the development of concept of Finance. The main aim of these theories was to bring a perspective to finance in traditional sense and express the choices of the individuals in mathematical terms. Traditional Finance significantly assumes that people are rational in decision making, and also that the basis of traditional finance theories are on the premises that investor behaves rationally and stock and bond market are efficient. The field and study of finance has long been based over the idea of “efficient markets”. Efficient Market Hypothesis (EMH) of classical finance states that at any given moment in the time the price of any and all assets and securities being traded is correct and reflects all available information.

While financial economists assumed rationality when making financial decisions, psychologists have observed that economic decisions are made in an irrational manner. We Humans feel, we are Rational and that is how we differentiate ourselves as “Homo Economicus” from Homo sapiens; but behavioural economists believe that humans are social creatures that have unique values and that tend to make decisions in accordance with their emotions and behaviour. At this juncture Behavioural Finance brought a novel perspective to analyse those areas that traditional finance could not explain or faced difficulty in explain. Basically, what Behavioural Finance argues is that behaviours and mood states of humans are principal factors in framing their investment

choices. Over the past two-three decades, field of behavioural finance has evolved to consider how personal and social psychology influence financial decisions and behaviour of investors in general. And empirical evidences have proved that people are not always rational in considering all the available information of an opportunity before deciding on it. This made the psychologists challenge the assumption of traditional/classical finance.

Though the most important breakthrough came in the year 1979 from Daniel Kahneman and Amos Tversky, who came out with a theory opposite to expected utility theory, called “Prospect Theory”. But the finance field was hesitant to accept the view of psychologists who had proposed the behavioural finance model. Psychologist Daniel Kahneman and economist Vernon Smith were the first ones to consider Behavioural Finance, who were awarded the Nobel Prize in Economics in 2002. This is when financial economist started to believe that the investor behaves irrationally as human brains process information using shortcuts and emotional filters even in investment decisions.

Now, the debate in theoretical finance between the efficient market hypothesis (EMH) and the field of the behavioural finance is of great interest. Since its emergence, EMH has been the most significant theory in the financial world explaining the behaviour of the various agents in the financial markets and neglected almost any potential impact of human behaviour in the investment process. But from the end of 1970s and the beginning of 1980s a growing number of researchers showed the anomalies of this theory. These anomalies of the modern portfolio models had immediate development of what is now known as behavioural finance. Behavioural finance integrates psychology and economics in finance theory and has its roots in the pioneering work of psychologists Daniel Kahneman and Amos Tversky (1979).

Behavioural researchers Barberis and Thaler (2003) have described the direction of behavioural research as the important job of trying to document and understand how investors, both amateurs and professionals, make their portfolios choices. Until recently such research was notably absent from the repertoire of financial economists, perhaps because of the mistaken belief that asset pricing can be modelled without knowing anything about the behaviour of the agents in the economy". So this essay would give an outline of the evolution and how behavioural finance has took shape of, what it is now, along with the meaning, difference between traditional and behavioural finance, determinants, cognitive biases and other significant theories that have contributed to the behavioural finance. Towards the end of this essay few empirical papers have been reviewed, analysed and interpreted that would substantiate the existence of behavioural finance in the field.

## Chapter One

### Origin and Evolution

Behavioural Finance as a new field began to emerge in the academic space during 1990s though its foundations can be traced back over 150 years. Victor Ricciardi and Helen K. Simon says that, “Several original books written in the 1800s and early 1900s marked the beginning of the behavioral finance school. Originally published in 1841, MacKay’s *Extraordinary Popular Delusions and the Madness of Crowds* presents a chronological timeline of the various panics and schemes throughout history” (Simon, fall 2000). Selden’s work called *psychology of the stock market* is one of its kind in 1912 where he applied the field of psychology directly to the stock market. Behavioural Finance is believed to be unique in its own way due to its integration and foundation of many different schools of thought and fields. It is an area based on an interdisciplinary approach that includes scholars from social sciences and business schools.

Topics such as dynamics of international markets, financial economics, and the operation of agents in the financial markets are scrutinised differently by different people. Since past two decades or so, interesting debate is going on between the rationalists and behaviourists schools of thought based on the assumption of rationality and irrationality respectively. Stiglitz says that this is the phase of transition we are in, between the two paradigms of rationalists and behaviourists. Traditional/classical finance accepts that the theories developed by researchers as valid in the sense that decisions made are in a maximisation of objective functions that are subjective to individuals’ budgetary constraints; and that investors only evaluate risk and expected

returns when making investment decisions. Indeed, standard approaches in financial economics make few assumptions about agents' psychology, and typically this has been considered as a great strength (McGuckian, 2012/2013).

Unlike traditional finance, behavioural supporters' fundamental importance is of the role of human conduct in modelling markets, and they say there is an innate relationship between the two. Behaviourists felt that contemporary economics undervalued and ignored the importance and role of emotions in the field of finance. For behaviourists, rational model is unrealistic perception for human judgement and believe that behavioural finance is primarily about the application of psychology to understand human behaviour in finance or investing. Behavioural economists have taken into account wide range of factors and subjective elements that are important to the financial decision making process such as psychological, social, and emotional factors beliefs internal factors such as neural processes, cognitive ability, mood states, and environmental factors like information sources, fashions/fads, social networks, crowd psychology herding, information cascades, person-to-person, social learning and media contagion of sentiment/behaviour. These are the reasons for any economic agents to depart from the rational behaviour that is presumed by the traditional economists. With the beginning of research of finance based on psychology coinciding with the start of many empirical studies result has ended up in heightening the doubt on fundamentals of standard finance theory and EMH. The beginning of this psychology based finance research coincided with the start of many empirical findings that raised doubt on fundamental of standard finance theory & EMH.

As discussed earlier, significance of the behavioural analysis that contributed towards financial economics was reflected in 2002 with awards of Nobel prize in economics to professor in psychology, Daniel Kahneman for detailing heuristics and biases

confronted by the investors while making decisions under uncertainty. In brief, the study of influence of psychology on the behaviour of economic agents and the following effects of this behaviour on financial markets is behavioural finance (Sewell, 2007). Next, the most important change that happened to this field was in when their succeeding research came into the field of economics called prospect theory (1979). Prospect theory has grown out of series of experiments that have led to strong conclusions after it took 30 years to develop it, which is highly important in economics and especially in financial economics. Then main stream financial economists realised that investors can behave irrationally. Debondt and Thaler (1985) published a behavioural based paper on investors' overreaction to news explaining investor Overreaction Hypothesis which opposes to EMH. It was followed by Shefrin and Statman (1985) publication of paper on Disposition effect suggesting that investors relate to past winners differently than past losers. Shefrin illustrated in year 2000 as to how these psychology papers influenced the field of finance. But eventually traditional finance played a very limited role in explaining issues like:

- (i) Why do individual investors trade?
- (ii) Why do returns vary across stocks for reasons other than risk?

With regard to understand what behaviour finance is and to make any comparisons, it is relevant to first discuss the main concepts of classical finance.

## Chapter Two

### Theoretical Framework and Literature Review

#### 2.1 STANDARD FINANCE

Traditional finance theoretical pillars can be traced to the very beginning of economic writing by the likes of Adam Smith and David Ricardo in the 1700s and to later work by John Stuart Mill in the 1800s. During that period, the concept of the rational economic agent or homo economicus could be explained as, one who is motivated by self-interest and seeks to maximise his own utility (wealth) in decisions for the lowest possible expenditure of work/labour, and this has been a central assumption in understanding the economic system in which we live in. “Standard finance is the body of knowledge built on the pillars of the arbitrage principles of Miller and Modigliani, the portfolio principles of Markowitz, capital assets pricing model (CAPM) of William Sharpe, Linter and Black, and option pricing model of Black and Scholes, and Merton” (Statman, What is Behavioural Finance, 2008). According to the economist F.Y. Edgeworth theoretical backbone for standard finance is the rational economic man.

Along with these, since 1940s economics has been free from psychological perceptions and agents were considered to be utility optimisers. Economists who advocated this approach are Paul Samuelson (1938), John Hicks (1939) and Lionel Robbins (1952) for the simple reason that for discipline to be accepted it needed to supply empirical evidence without the complications of actual human action. Thalers’ view on standard finance is that, main reason for this early development was that traditional models, with rational and unemotional economic agents, were easier to build (Thaler, 2000). Also, it is believed that since it was not easy to quantify factors such as emotions and

human thoughts, classical finance undervalued such influences in the field of finance. Due to these beliefs, it can be seen that since past fifty years, finance theory has assumed that investors have difficulty in making financial decisions which are well-informed, careful and consistent.

As mentioned earlier, the belief of standard finance was that every individual would consider all the available information and act on this so as to maximise their own utility in the context of free market. According to Meir Statmans' article "What is Behavioural Finance", Standard finance which is also known as modern portfolio theory, has four foundation blocks:

- i. Investors are rational;
- ii. Markets are efficient;
- iii. Portfolios were to be designed by the investors as per the rules of Mean-variance portfolio Theory; and
- iv. Expected returns are a function of risk and risk alone (Statman, What is Behavioural Finance, 2008).

Main contributions towards this field of finance is started since 1952 with the Mean-variance portfolio theory which was propounded by Markowitz that was completely developed in 1959; in the year 1961 Merton Miller and Franco Modiglianis' work has described investors as rational; it was then followed by Eugene Famas' Efficient Market theory in 1965. Later, mean-variance theory was adopted by William Sharpe which he described as investor behaviour and introduced CAPM (Capital Asset Pricing Model) in 1964. CAPM theory tells about the differences in expected returns that are determined only by differences in risk, and beta is the measure of risk.

According to Jensen and Merckling “Traditional finance theory stands directly on the notion of the ‘Rational man’, a person who is much different from individual” (Jensen and Merckling, 1994). Sometime later, Meir Statman rejected the definition in the sense of rationality, by which “rational prices reflect only utilitarian characteristics, such as risk, not value expressive characteristics, such as sentiments” (Statman, Behavioural Finance : Past Battles and Future Engagements, November 1999). Similarly, Montiers’ view was “the rational construct assumes that individuals, both investors and managers are capable of understanding vastly complex puzzles and conduct endless instantaneous optimizations” (Montier, 2012). Due to these kind of thinking, concept of market efficiency and arbitrage came into existence in the field of finance.

One of the classic theories of standard finance was the Efficient Market Hypothesis (EMH) that has been developed by Paul Samuelson and Eugene Fama in 1960s which postulates that that market prices fully reflect all available information. According to a work submitted by Rahul Subhash as part of his dissertation work carried out by him states that EMH reflects all available relevant information in the prices instantaneously and completely. For around 40 years, EMH has been a central finance paradigm at the same time it was criticised as well. Fama defined an “efficient market as one in which security prices fully reflect all available information, and hypothesis states that real world financial markets are efficient” (Fama, 1970). According to Fama trading system based on the currently available information is impossible in order to have excess returns consistently. EMH caught everyone’s attention and became a sensation in the 1970s, which is when a lot of research work was developed supported by immense theoretical and empirical success. Shiller enunciated that the EMH is based

on the notion that people behave rationally, maximize EU accurately and process all available information (Shiller, 1998). Three basic argument of EMH:

- Investors are rational and by implication securities are valued rationally.
- Investor takes careful account of all available information before making investment decisions.
- And decision makers always pursue self-interest.

“The empirical evidence from the 1970s, which only strengthened the cause, fell into two main categories:

- (i) Any fresh news about a security should be reflected in its price promptly and completely and
- (ii) Stock Prices should not move as long as there is no new information about the company, since it must be exactly equal to the value of the security. In other words, non-reaction to non-information” (Shleifer, 2000).

But eventually, based on both empirical and theoretical front, EMH had to face challenges. As rightly pointed by Grossman and Stiglitz, for an efficient market it is not possible to exist as cost is associated to the information in it, and also prices would not perfectly reflect the available information, since if it did, then there would be no incentive for investors to spend resources to obtain it (Stiglitz G. a., 1980). This is because investors would act on what they perceive to be relevant information, thus deviating from the actual prices from its fair value. Later, Kahneman and Reipe demonstrated that people deviated from the standard decision making model in significant fundamental areas, which provided psychological evidence that people did not deviate from rationality in a random manner. Their works illustrated that investors were not interested to trade randomly between each other, but were interested to buy

or sell at the same time (Kahneman, 1998). Due to the contributions made by Shiller (1984) and Summers (1986), the credibility of testing of the EMH was done until 1980s based on this model; it was due to the fact that predictions about returns contradicted the existing model assumption of constant expected returns.

At the same time, the two seminal works of Kahneman and Tversky (1971, 1979) along with that of Slovic (1972) have been a major challenge faced by the modern finance theories that assumed rationality as foundation. Challenges of these kind from Behavioural finance scholars which argued against traditional finance's theoretical and empirical construct failed to explain the occurrences in financial market. Further it was followed by continuous publication of theoretical and empirical research arguments against the notion of expected utility and EMH in mainstream finance journals.

## **2.2 BEHAVIOURAL FINANCE**

Since last two decades, behavioural finance field has evolved to consider how financial decisions and behaviour of investors are being influenced by personal and social psychology. Behaviour finance focuses upon how investors interpret and act on information to make informed investment decisions. It is a discipline that explains and increase our understanding with regard to the investors' emotions and the cognitive errors which influence the decision making process. In the process, it integrates the field of psychology, sociology, and other behavioural sciences to explain individual behaviour, to examine group behaviour, and to predict financial markets. Behavioural finance assumes that people are not always rational; and seem to be selling winners and holding losers (stocks). Recent definitions of Behavioural Finance that took shape are:

- Belsky and Gilovich (1999) prefer to call behavioural finance as ‘behavioral economics’ and says that “Behavioral economics combines the twin disciplines of psychology and economics to explain why and how people make seemingly irrational or illogical decisions when they spend, invest, save, and borrow money” (Belsky, 1999).
- Shefrin (2000) defines Behavioural finance as “a rapidly growing area that deals with the influence of psychology on the behaviour of financial practitioners” (Shefrin, 2000).
- According to Sewell (2007), “Behavioral finance is the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets” (Sewell, 2007).

Traditional assumptions of financial economics are relaxed in the case of Behavioural finance by incorporating the observable, systematic and very human departures from rationality into standard models of financial markets. Behavioural Finance also assumes that the individual investor’ and their market outcomes are prone to information structure, and various other market elements. Due to the contributions of key literary works of Daniel Kahneman and Amos Tversky, they are recognised as the fathers of Behavioural Finance. And in 1960s they focused on different lines of research and integrated their works in 1970s in order to create bench marks in the field of finance. It says that the investors’ behaviour in financial market is dependent on psychological principles of decision making which explains why people buy and sell investments; this is what standard finance failed to explain. At the same time behavioural finance sees how investors interpret the provided information and act on it so as to implement their financial investment decisions.

As Schindler mentioned in his work (Schindler, 2007), there three main cornerstones for research in Behavioural Finance:

1. *Limits to arbitrage*- it argues that “it can be difficult for rational traders to undo the dislocations caused by less rational traders” (Barberis and Thaler, 2003).
2. *Psychology*- Limits to arbitrage cornerstone brings us to this cornerstone as to explain investor irrationality and their decision-making process, experimental evidence of cognitive psychology would be drawn by behavioural finance (Barberis and Thaler, 2003). This area of research has shown that certain biases were exhibited systematically by the individuals while they formulate their beliefs and preferences which would in turn affect their decisions.
3. *Sociology*- This cornerstone insisted that considerably huge number of financial decisions are the result of social interaction, rather than being made in isolation.

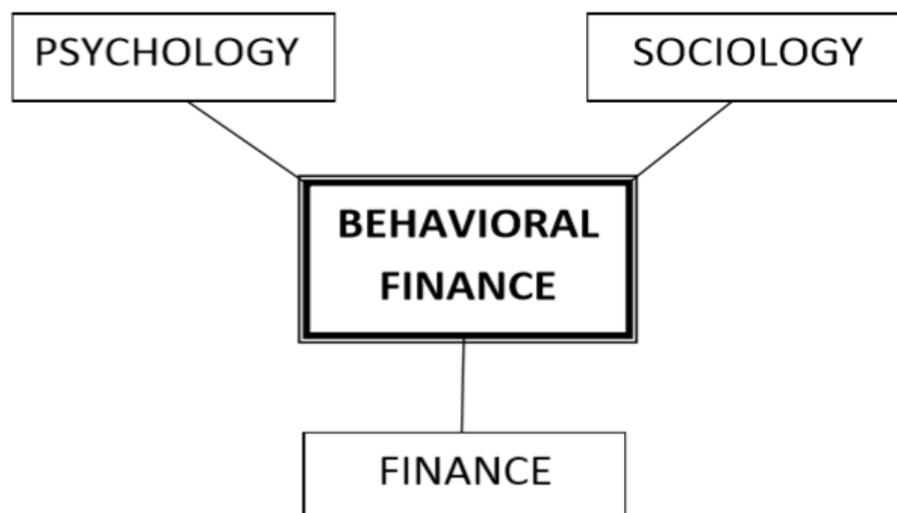


Figure 2.1 Evolution of Behavioural Finance, (Schindler, 2007)

## **2.3 TRADITIONAL FINANCE Vs BEHAVIOURAL FINANCE**

### **TRADITIONAL FINANCE**

- Assumes that people process data approximately and correctly.
- Presupposes that people view all decisions through the transparent & objective lens of risk & return.
- Assumes that people are guided by reasons & logic and independent judgement.
- Argues that markets are efficient implying that the price of each security is an unbiased estimate of its intrinsic value.
- EMH views that price follow random walk, though prices fluctuate to extremes, they are brought back to equilibrium in time.

### **BEHAVIOURAL FINANCE**

- It recognises that people employ imperfect rules of thumb (heuristics) to process.
- Postulates that the perceptions of risk & return are influenced by how decision problem is framed.
- Recognises that emotions & herd instincts play an important role in influencing decision.
- Argues that discrepancy between market price and fundamental value are often caused by heuristic-driven biases & errors, frame dependence effects, emotions & social influences.
- It views that prices are pushed by investors to unsustainable levels in both directions.

## 2.4 ASSUMPTIONS AND CHARACTERISTICS OF BEHAVIOURAL FINANCE

### Assumptions

- Loss aversion: Behavioural finance assume that the investors would be loss averse who seek to restrict the size of probable loss rather than pursuing to minimise the variability of the probable returns.
- Bounded rationality: This one is about the way in which human being act, limits their rationality.
- Denial of risk: This assumption is that the investors are aware of the statistical odds but refuse to believe these odds.

### Characteristics of Behavioural Finance

In the field of behavioural finance there are four key themes- Heuristics, Framing, Emotions and Market Impact which characterised the field. These four themes have been integrated into review and application of investments, corporations, markets, regulations, and educations-research.

**1. *Heuristics*:** These are also referred to as rules of thumb which can be applied in decision making process in order to reduce the cognitive resources to solve a problem. These heuristics are the mental shortcuts that help in simplifying the complex methods so as to make a judgement. These are mental shortcuts that simplify the complex methods to make a judgment. Usually, investor is faced with a set of preferences within certainty and limited ability to quantify results leading to identification and understanding of all heuristics that affect financial decision making. To mention some

common heuristics are mental accounting, anchoring & adjustments representativeness, regret aversion, familiarity, conservatism, overconfidence, availability, ambiguity aversion and effect. In short, heuristics help investors in making financial decisions.

**2. *Framing*:** It is the perceptions of choices that people have strongly altered by how these choices are made. It reflects that the choice depends on how the question has been framed, though the objective facts are constant. Psychologists refer this behaviour as a 'frame dependence'. From the works of Glaser, Langer, Reyniers and Weber (2007), it shows that forecasting of the stock market depends on whether they are given and asked to forecast future prices or future return, so this way framing has sceptically affected investors' choice.

**3. *Emotions*:** Along with emotions, other elements which drive decisions of human beings are associated human unconscious needs, fantasies, and fears. One might wonder how these elements influence the financial decision making of investor's. This is when, we are reminded of the role of Keynes's "animal spirit" in behavioural finance that explains investor preferences and thus shaping thus financial markets (Shiller, 2009).

**4. *Market Impact*:** For the question, are markets and market prices being affected by cognitive errors and biases of individuals and groups; interesting insight is that for behavioural finance field market prices did not appear to be fair. Standard finance argued that the investors' mistakes would not influence the market prices as when prices diverge from the fundamental value, rational investor would exploit the mispricing for their own profit. In this context, the question is who keeps the markets efficient? Also how market anomalies could be explained by psychology? The fact is

that even institutional investor exhibits the inefficiency and other limit to this is arbitrage (Shleifer and Vishny, 1997; Barberis and Thaler, 2003). Due to this reason price deviations from fundamental value cannot be corrected by rational investor resulting in the possibility of investors affecting the market prices.

## **2.5 THEORIES OF BEHAVIOURAL FINANCE**

To explain the various irrational behaviours of the investors in financial markets, behaviour economists seek the knowledge of human cognitive behavioural theories from various disciplines of sociology, psychology and anthropology. Literature contributed towards behavioural finance by Thaler, Simon, Barberis and Thaler, Odean and many are key introductions to the field. These are all in essence have founded on the work of Daniel Kahneman and Amos Tversky. Their work, prospect theory is considered as a jewel in the behavioural finance space. It has provided an alternative to explain better the complexities of human behaviour. This theory has been considered as an important contribution to the field. It took 30 years for them to develop this theory that played a significant role in economics and especially in financial economics. Prospect Theory theorizes how an individual or group of individuals behave, on average, in the world of uncertainty and describe how people frame decision in presence of uncertainty.

According to Prospect Theory, investors look at preferences in terms of potential gains or losses in relation to specific point called a reference point that is often called a purchase point. The main idea behind this theory is about the way in which investors make references and decisions is on the basis of a value function that is in contrast to the utility function. An important observation from this work is that investors feel more

strongly to the pain from loss rather than the pleasure from equal gain. Kahneman and Tversky wrote in 1981: “Prospective theory and the sales should be viewed as an approximate, incomplete and simplified description of the evaluation of risky prospects”. Due to certain features of prospect theory it is unique in its own way. They are that, it assumes the preferences made based on the reference point that has been subjectively determined independent of the decision maker’s state of wealth. At the same time, it is this subjective reference point that introduces a frame to a prospect affecting the choice behaviour of the individual. An important point that has to be noted is about the kink that exists in the reference point of the value function of prospect theory; assuming that the individuals weight losses more than the gains. According to the work of Peter Hede, this theory explains that people focusses on the outcomes of their decisions which distinguishes from the Bernoulli’s expected utility theory that looks at the utility of the state of wealth. It says that most investors are risk averse while chasing gains, but are risk lovers while trying to avoid a loss.

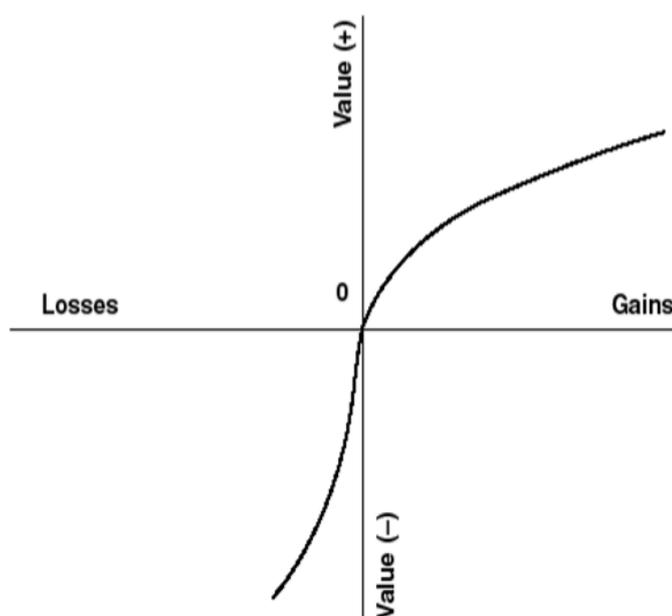


Figure 2.2 Kahneman-Tversky Value Function

Value function of Prospect theory is equivalent to that of classical economic utility function which is considered as another foundation of prospect theory. Kahneman and Tversky founded that investors underweight outcomes that are merely probable in comparison with outcomes that are obtained with certainty. Under Prospect theory it is also believed that the value is assigned to gains and losses rather than to final assets, and also probabilities are replaced by decision weights. According to Peter Dybdahl Hede's Behavioural Finance, it is said that value function is another foundation of prospect theory. The main difference between value function and utility function is the reference point of the value function that is determined by the subjective impression of individuals (Hede, 2012). When utility function is compared with utility theory, it is observed that conventional expected utility function is concave downward for all levels of wealth, while the value function is concerned it is upward sloping for all wealth levels under the reference point and downward sloping for all the wealth levels above the reference point. It is noticed that for the wealth levels below the reference point, investors would be risk seekers, i.e. they are ready to make decisions that are riskier bets so as to stay above their preferred target of wealth. Whereas, for wealth levels above this reference point, value function is downward sloping, in line with conventional theories, and in investors here are risk averse. Two major phenomena that has been observed by Kahneman and Tversky are: Preference for certain outcomes and preference for risk when faced with losses.

Other major important theory after prospect theory that contributed towards behavioural finance was regret theory. Though regret is considered as an aspect of prospect theory due to investors always preferring to take risk when confronted with losses which is a phenomenon of loss aversion. This theory was originally developed by Graham Loomes and Robert Sugden, David E. Bell and Peter C. Fishburn which was

subsequently improved upon by others. According to Bell, 'Regret is an emotion caused by comparing a given outcome or state of events with the state of a foregone choice'. "Regret theory is about people's emotional reaction to having made an error of judgment and investors may avoid selling stocks that have gone down in order to avoid the regret of having made a bad investment and the embarrassment of reporting the loss. They may also find it easier to follow the crowd and buy a popular stock, if it subsequently goes down it can be rationalized as everyone else owned it" (Karthikeyan, 2016). Along with these theories, other theories which are celebrated in behavioural finance are anchoring, over and under reaction. While anchoring is the use of irrelevant information as a reference I order to evaluate or estimate some unknown values or information disproportionate reaction to news resulting in irrational optimism and unjustified pessimism by investors in the financial market.

### Chapter Three

#### BEHAVIOURAL BIASES AND THEIR INFLUENCE

The systematic patterns of biases have been documented by psychologists regarding how the people form views and take decisions as these biases affect the investment decisions of the investors. Various forms of behavioural biases which influence the investors' decision making process have been substantiated by the empirical studies conducted by behavioural economists in India and over the world as well, along with some suggestions for investors to overcome these biases. According to Daniel Kahneman "Heuristics are simple efficient rules of the thumb which have been proposed to explain how people make decisions, come to judgments and solve problems, typically when facing complex problems or incomplete information. These rules work well under most circumstances, but in certain cases lead to systematic cognitive biases" (Parikh, 2011). There are wide range of behavioural biases towards which investors may be inclined to. Due to heuristic simplification, people when faced with difficult and uncertain decisions may take predictable, non-optimal preferences. A long list of specific biases have been distinguished by researchers in recent studies and classified biases based on cognitive and emotional lines. While "this sort of bias taxonomy is helpful— an underlying theory about why people operate under bias has not been produced. Instead of a universal theory of investment behaviour, behavioural finance research relied on a broad collection of evidence pointing out to the ineffectiveness of human decision-making in various economic decision-making circumstances" (Pompian M. M., 2006). Most common psychological biases or heuristics which affect the decisions of investors are overconfidence,

representativeness, Herding, Anchoring, Cognitive Dissonance, Regret Aversion, Gamblers Fallacy, Mental Accounting, Hindsight, Self-attribution and confirmation, Availability, Conservatism.

### **1. OVERCONFIDENCE BIAS**

Confidence is viewed as an inflated view of one's own abilities. In simple words, overconfidence can be put as baseless faith in one's intuitive reasoning, judgement, and cognitive abilities. There are many studies which found that individuals tend to over rate their views about future. According to psychologists overconfidence will lead people to overestimate their knowledge, under estimate risk, and misrepresent their ability to control events. This bias is derived from an extensive body of cognitive psychological experiments and surveys wherein subjects overestimated their own anticipating abilities and the precision of information they have been given. Plainly put, people with overconfidence think that they are smarter and have better information than they actually do. Overconfident individuals tend to think about their knowledge level that they know more than they actually do, but this does not reflect that they are ignorant. It simply means that they view of themselves as better than what they are actually. It is believed that the two main aspects of overconfidence are Mis-calibration and better than average effect. Overconfidence would result in: Mistaking luck for skill; too much risk; too much trading. Among investors there is a common trait to be overconfident of their ability in picking up stocks and decide when to enter or exit a position. Odean found out these tendencies that traders who mostly trade bear to receive lower returns than the market (Odean, 1998).

According to the research conducted by Barber and Odean (2001) which was based on gender where it was found that men are more confident than women; and even

conducted a test on the theory if overconfident investors trade excessively. They document that “men trade 45% more than women, and find that men’s net returns were cut by 2.5% a year while it was 1.72% for women, in data gathered from 1991 through 1997” (Barber, 2001). Another empirical study was carried out by Fagerstrom where he investigated about overconfidence and over optimism in the market and factor that affected individuals in making decisions when faced with investment and analysing. He carried out this research by taking the summary of expected growth of profits of S&P Company for upcoming 12 months, and compared them with the actual/realized outcomes of the period between 1986 February to April 2008. Finally the results depicted that the analysts of the company were affected by problems of over confidence and over optimism biases along with other biases like anchoring and herding (Fagerstrom, 2008).

## **2. REPRESENTATIVENESS BIAS**

According to Gilovich, representativeness can be defined as “an assessment of the degree of correspondence between a sample and a population, an instance and a category, an act and an actor or, more generally, between an outcome and a model” (Thomas Gilovich, 2002). It can also be thought as drawing conclusions from little data provided, which is due to a tendency to form judgements based on stereotypes that the investors’ recent success; tend to continue into the future also. Overreaction of investors to new information is due to representatives, where they give too much importance to the new information in forming their expectations about future.

Fundamentally, as Kahneman and Tversky explained, “it is concerned with determining conditional probabilities. Using the heuristic, the probability that an object or event A belongs to a class or process B is determined. Representativeness is said to

be usually employed, while making judgments under uncertainty, when people are asked to judge the probability that A belongs to B” (Tversky, Subjective Probability: A judgment of Representativeness., 1972).

Ritter (1991) noted another interesting consequence of judgment by Representativeness bias where he attributed long run underperformance of IPOs to the investors’ short term orientation which has many implications to investment decision making. While making investments, individuals tend to attribute good characteristics of a company directly to good characteristic of its stock. These companies turn out to be poor investments more often than not (Lakonishok et al, 1994).

Representativeness can be explained by the actions such as

- Investors often try to detect patterns in data which is random number.
- Investors extrapolate past returns which actually follow randomness.
- Investors may be drawn to MFs with good track record because such funds are believed to be representative of well –performing funds. They forget that even unskilled manager can earn higher return by chance.
- Investors are overly optimistic about past winners.
- Good companies -good stock syndrome.

### **3. HERDING BIAS**

Any mutual imitation in financial markets that leads to convergence of action can be defined as Herding. It is the most common mistake where investors go by the investment decisions taken by majority. In financial markets, when there is any best time to buy or sell, due to this reason even the investor who would think to take an action is faced by strong psychological pressure refraining her/him to do so. This pressure is mainly due to the reason of pressure or influence of the peers.

‘The Reliance Power IPO, 2008 is an example of an instance where many investors subscribed without having full information on the issue. Investors apply to “herd behaviour” because they are concerned of what others think of their investment decisions’ (Scharfstein, 2000).

Welch conducted a study where he found out that analysts exhibited herd behaviour. He noticed that whenever an analyst revise his/her recommendations, the following two revisions would have a positive correlation with that of the initial ones. It was also revealed in the study he has carried out that revisions were heavily influenced by the prevailing market consensus (Welch, 2000).

Two main reasons that can be associated to the herd behaviour of investors are that, one- social nature of people and general tendency to seek acceptance from group rather than being a standout. While the other reason is that investor’s tendency to think that no group can go wrong in making a decision. This makes investors follow the herd under the illusion that the one whom they are following would know something which he/ she may not be aware of.

Another empirical study of Fotini Economou, Alexandros Kostakis, and Nikolas Philippas during 2010 examined herd behaviour in extreme conditions of market for which they used data from the Greek, Italian, Portuguese and Spanish Stock markets for the years 1998-2008. It means that there existed herding behaviour associated with market returns, trading volume, and return volatility. Along with this, they also investigated the presence of herd behaviour during the global financial crisis of 2008. The results of the study showed that during the periods of rising markets strong herding was found in these stock markets. Finally, it is said that there is evidence of Herding during the global financial crisis of 2008 only for the Portuguese stock market and evidence of anti-Herding for the Spanish and the Italian stock markets. Investor

behaviour seems to have been rational for the Greek stock market during the global financial crisis (Fotini Economou, 2010).

#### **4. ANCHORING BIAS**

Anchoring is a psychological situation that exists when investors give unnecessary importance to statistically random and psychologically determined ‘anchors’ which leads them to investment decisions that are not essentially ‘rational’. It can also be explained as a tendency where in a thought is attached or anchored to a reference point though it might have no logical relevance to the decision being made. Anchoring may seem unlikely, but it does prevail in situations where people deal with concepts that are new.

“In many situations, people make estimates by starting from an initial value that is adjusted to yield the final answer. The initial value, or starting point, may be suggested by the formulation of the problem, or it may be the result of a partial computation. In either case, adjustments are typically insufficient (Slovic and Lichtenstein, 1971). That is, different starting points yield different estimates, which are biased toward the initial values. We call this phenomenon Anchoring” (Tversky, On the psychology of prediction, 1973).

Investors exhibiting this bias are likely to be influenced by these anchors while answering key questions like ‘Is this a good time to buy or sell the stock?’ or ‘is the stock fairly priced?’ The concept of Anchoring can thus be explained by the tendency of investors to “anchor” their thoughts to a logically irrelevant reference point while making an investment decision (Pompian M. M., 2006).

Kristensen and Gaerling conducted an empirical study to test the hypothesis that “in negotiations counteroffers are generated through an Anchoring-and-adjustment process leading to an effect of the anchor point, and those counteroffers are influenced by changes in reference point which in turn determine whether the anchor point is perceived as a gain or a loss”. They simulated this negotiation process with the help of undergraduate business administration students and the results revealed that participants treated the proposed selling price as an anchor (Garling, 1997).

## **5. COGNITIVE DISSONANCE BIAS**

"Cognitive Dissonance is the mental conflict that people experience when they are presented with evidence that their beliefs or assumptions are wrong" (Montier J. , 2002). It is the mental conflict that people will experience when they are faced with the evidence that their belief or assumptions made are wrong.

When investor is faced with a situation where he/she has to choose among two alternatives, it is likely that some conflict may follow after decision has been taken where negative aspects of the decision made would be visible prominently while positives would add to the conflict. There are two aspects of cognitive dissonance that is related to decision making, according to Pompian (2006),

- (i) Selective perception: where investors only register information, which affirms their beliefs thus creating an incomplete view of the real picture.
- (ii) Selective decision-making: Investors are likely to reinforce commitments previously made even though it might be visible that it is the wrong thing to do. This occurs because of commitment to the original decision forcing the investor to rationalize actions, which

would allow him to stick to it, even though these actions are sub-optimal (Pompian M. M., 2006).

## **6. REGRET AVERSION BIAS**

Regret is an emotion which individual feels when they realise that they would have led to a more favourable outcome had they been acted in a different way. It can also be explained as an emotion that is experienced by an individual for not having made a right decision, i.e. a kind of feeling of responsibility of loss.

Regret avoidance is a tendency where people try to avoid actions that would create discomfort over that decisions. This is the reason why there differs investors selling and losing positions. In situations, investors remain to the losing positions in the hope of recovery in order to avoid the stress associated with admitting a mistake.

The fundamental reason for this error is the tendency that people hate to admit their mistakes. Due to the suffering from bias, investors avoid to take any decisive actions for the simple reason that they are scared of whatever decisions they make will be sub-optimal in Hindsight. This aspect has a downside effect of making individuals hold onto the losing position for long time. Another downside is that it can stop investors from making an entry into the market when there has been a downtrend, which is showing signs of ending, and signals that it is a good time to buy. Various psychology experimental studies suggested that under uncertainty, decision making is influenced by regret. People who are regret averse tend to avoid distress arising out of two types of mistakes:

- i. Errors of commission – which occur as a result of misguided action, where the investor reflects on this decision and rues the fact that he made it, thus questioning his beliefs

- ii. Errors of omission – which occur as a result of missing an opportunity which existed (Pompian M. M., 2006).

## **7. MENTAL ACCOUNTING BIAS**

Mental Accounting was coined by Richard Thaler and defined by Thaler as the “set of cognitive operations used by individuals and households to organize, evaluate, and keep track of financial activities (Thaler, 1999). According to Shiller, Mental accounting is the tendency where people place specific events into different mental accounts based on superficial attributes. It refers to how people mentally accommodate different parts of their wealth. A case of over monitoring of any portfolio is the result of this mental accounting bias.

Mental Accounting is basically a set of cognitive operations which are used by individuals and households to organize, evaluate, and keep track of financial activities. This result in a tendency for people to separate their money into separate accounts based on a variety of subjective reasons. Individuals tend to assign different functions to each asset group, which has an often irrational and negative effect on their consumption decisions and other behaviour. In short, Mental Accounting can also be referred to as codes people use when evaluating an investment decision.

## **8. HINDSIGHT BIAS**

Shiller (Schiller, 2000) described hindsight bias as a tendency to think that one would have known about actual events were coming before they happened. Due to which investors usually make wrong decisions or pretend that the outcome of their decision was known to them very earlier. Even if any investor is faced with any losses, still investor would pretend as if they knew about it earlier; due to this investors don't learn

lessons from their wrong decisions and such decisions may be taken again in future also.

Monti and Legrenzi carried out an investigation regarding the relationships between investment decision making and Hindsight bias. They noticed that economic studies consider the agent's foresight perspective only, without taking into account the Hindsight bias possible effects in the decision making process. In order to carry out this investigation procedure, they have collected data from 25 Master and PhD students attending courses in Finance and Economics at Bocconi University and from financial managers from a leading Italian bank by circulating two sets of questionnaires. Their study revealed strong evidence for the consequences that Hindsight bias can have on the investor's portfolio decisions: the portfolio allocation perception and therefore, the risk exposure (Legrenzi, 2009).

## **9. SELF ATTRIBUTION BIAS and CONFIRMATION BIAS**

This Self Attribution Bias (SAB) theory has been attributed to Heider (1958), who observed that people tend to attribute successful outcome from decisions to their own actions and bad outcome to external factors. SAB has fundamentally emerged from two important traits of humans: Self protecting and Self enhancement. While Self-protecting is about the desire one has towards oneself to have positive self-image, self enhancement is about the desire for others to see us positively. Without having a pre-conceived notion, it is difficult to encounter someone or something. This impression is very hard to shake as people have a tendency to selectively filter to pay more attention towards information that supports their opinions while ignoring the rest. But this type of selective thinking is often referred to as the confirmation bias. There is a

relation between overconfidence bias and SAB, as former is reflected in the later attributing to their own innate ability and unusual skill of success that they enjoy.

It often leads to a natural tendency of attributing any disappointment to bad luck rather than a lack of skill.

Confirmation bias is the people's desire to find information that agrees with their existing view. Any information that conflicts with the null is ignored, whilst information that reinforces the null is over-weighted. In investing, the confirmation bias suggests that an investor would be more likely to look for information that supports their original ideas about an investment rather than seek out information that contradicts it. Due to this kind of investor's tendency, it often results into wrong decision.

#### **10. AVAILABILITY BIAS**

As per this availability bias, it is about the tendency of the people to base their decisions more on recent available information rather than carrying out any detailed study of the occurred events in the past and hence become biased to that latest news. In the world of Investment, investors often make decisions on the basis of information which is available already to avoid the pain of doing any detailed analysis of the past events.

Availability bias is used so as to evaluate the likelihood of an event based on how quickly instances come to mind. Availability is a cognitive heuristic in which a decision maker relies upon knowledge that is readily available rather than examine other alternatives or procedures.

Brief analysis of effects of behavioural biases on investors and its consequences are discussed here. When behavioural economists carried out empirical research in and

around the world, it is identified that each psychological bias has implications on investment decision making and behaviour. To begin with, key effects of overconfidence bias on investors is that they trade too much, and heavy risk is associated due to failure of diversification of portfolios by investors. These effects have a consequence resulting in paying too much brokerage and taxes, and also chance of incurring high losses. Representativeness bias effects investors by associating new event with that of a known event and make investments on the basis of that. This effect would result in making investor purchase over priced stocks by paying higher than the actual prices. The key effects of herding bias on investors is that due to this bias, investor lacks individuality in decision making which has a consequence of bubbles or bubble bursts. With the anchoring bias, investor tends to consider logically irrelevant prices as important in the process of decision making. It will lead to bad entry timing into investment in the financial market and sometimes miss good investment opportunities as well. With the cognitive dissonance in action, investors tend to ignore new information which contradicts their known beliefs and decisions. This will have a consequence of reducing investor's ability to make rational and fair investments in financial market. Regret aversion bias affects investors by making them sell winner stocks soon while holding the losing stocks too long which results in reducing the returns of the investors. Investors cannot or have low diversification of portfolios with the mental accounting bias in action that leads to irrational decision making and negative effects on the returns over investment. Hindsight bias makes the investors feel that the past event was obvious when it really was not, at its onset; consequently it has incorrect oversimplification of decision making by investors.

## **Chapter Four**

### **EMPIRICAL STUDIES REVIEW**

The above analysis can be justified based on the empirical studies that have been reviewed to see if behavioural biases affect the decision making of investors. A study of Mushtapha Chaffai and Imed Medhioub on “Behavioural Finance: An empirical study on Tunisian Stock Market” was published in International Journal of Economics and Financial Issues in 2014. It studied the influence of psychological and emotional factors on the behaviour of Tunisian stock market investors. They carried out this work based on a questionnaire distributed to the Tunisian investors in the stock market, and by using the Multiple Correspondence analysis and focussed on how the behavioural finance can affect Tunisian stock market to capture the biases. From the study, it is revealed that behavioural biases are present in this stock market where investors lacked behaviour rationality in the stock market. It has been observed from various criteria that investors with a high level of education are subjected to behavioural biases, and agents who invest amounts between 1,000 and 20,000 TND are most vulnerable to behavioural biases. They have determined that bias of loss aversion, representativeness, availability and anchoring are the most important biases that affected the stock market (Medhioub, 2014).

Besides this, there is other empirical study that has been carried out by Abiola Ayopo Babajide and Kehinde Adekunle Adetiloye (2012) on “Investors’ behavioural biases and the security market: an empirical study of the Nigerian Security Market”. Their main objectives in carrying out this research is to examine the extent of behavioural biases among security market investors in Nigeria and, to examine the effects of behavioural biases on stock market performance in Nigeria. In order to carry out the

examination, they used questionnaire method to collect data and correlation technique with Pearson Product Moment Coefficient to analyse a survey of 300 randomly selected investors in Nigeria security market. Consequently, they observed that bias of overconfidence, loss aversion, and framing are present in the stock market. Though the results showed a low negative relationship, yet the market depreciates in value as investors exhibited behavioural biases. They concluded by saying that, being aware of behavioural biases is the crucial first step in ensuring that the decision making process is not adversely affected by them and suggested that rational decisions are more likely when there is sufficient information available to decision-makers and when that information is presented and analysed to recognise common pitfalls (Adetiloye, May, 2012).

“Behavioural Finance: An Introspection of Investors Psychology” is one of the interesting papers in the case of India by G. K. Deshmukh and Sanskrity Joseph. Their main objective of the paper is to assess impact of behavioural factors over mutual fund investment decision made by investors in Raipur city. In order to carry out research they have conducted a survey on factors of behaviour of investors with respect to investment in mutual fund industry from 300 investors of mutual funds across different demographic profiles in Raipur city. It has been revealed by the researchers that the investors have limited knowledge about the mutual industry and they basically depend on their financial consultant or investment and brokerage firms to take purchase decision on their behalf. The investment in mutual fund for them is based upon limited criteria chosen by them like, past performance, return and dividend, analyst reports based on heuristics, Framing, emotion and market impact which is suggested by their reference group. Further, it was also found that the investors basically depend on the

advice given by their respective agents or personal advisers to choose for them (Joseph, January 2016).

Zipporah Nyaboke Onsomu carried out a research to identify behavioural biases that affect individual investors at the National Securities Exchange. The work is titled as “The impact of Behavioural Biases on Investor Decisions in Kenya: Male Vs Female”. The researcher has investigated the relationship between gender and behavioural biases by conducting the study using the method of questionnaires that were circulated among the investors at Nairobi Securities Exchange, Kenya during January and March 2014, of which a total of 58 investors responded. The purpose of this piece of work was to establish whether the investors at Nairobi Securities Exchange are affected by availability bias, representativeness bias, Overconfidence bias, and confirmation bias, at the same time to determine the effect of gender on the behavioural biases. From the study it was revealed that investors at Nairobi Securities Exchange are affected by representativeness bias and availability bias, and confirmation bias but the effect of them was moderate while overconfidence bias had no effect on investors (Onsomu, The Impact of Behavioural biases on investor decisions in Kenya: male Vs. Female, June 2014).

## CONCLUSION AND FUTURE RESEARCH

Behavioural Finance has been contributing for our better understanding of actual investors' behaviour and real market practices since past 25 years, and is now expected to make significant progress in future as well. This emerging field of financial economics is representing a revolution in financial theory as a combination of financial theory with that of other social sciences resulting in what we have as behavioural finance. Though it highlights the psychological edge of investment decision making process in contrast to that of Efficient Market Hypothesis, it is not without its critics. Some supporters of EMH and standard finance theory criticise this approach of behavioural finance. Eugene Fama, who is considered as the founder of the Efficient Market Hypothesis contend that "behavioural finance is more a collection of anomalies than true branch of finance and these anomalies will eventually be priced out of the market or explained by appeal to market microstructure arguments". He has further argued that even though there are some anomalies that cannot be explained by modern financial theory, market efficiency should not be totally abandoned in favour of behavioural finance.

But what conclusion can be drawn is that investors do not always act in a rational due to the cognitive and psychological errors that investors have to deal with. Behavioural finance is can be considered as an alternative solution to the difficulties that are being faced by the traditional theory in explain certain financial phenomena and not a perfect replacement to classical finance paradigm. Yet it is a fact that investor's personality and their investment decisions making is not possible to separate.

Therefore, it cannot be ignored the importance of understanding of the individual financial behaviour of capital market investors; at the same time behavioural factors are important in financial markets as they influence the investors who make the financial decisions. Due to the fact that behavioural factors play a vital position in the decision making process of investors, they have to take necessary measures to minimise or avoid these illusions in their investment decision making process. Cognitive psychology has to be given importance in the process of decision making as understanding of human nature is significant to take effective investment decisions.

In order to avoid or minimise the psychological biases in investment decisions of the investors, they have to keep detailed records of their stocks and also decide on specific criteria to make an instant decision to buy, sale or hold. According to Parikh, for an investor to succeed, one has to get in touch with the emotional indiscipline he has exhibited, and deal with it so that it is not repeated. In order to deal with this emotional indiscipline, investors have to keep in mind answers to questions before taking any decision to buy, sell or hold; such questions are “why investors purchase the stock, what is the time horizon of the investment, What is the expected rate of return, after one year the stock has under-performed or over-performed, do you plan on buying, selling or holding your position, and how risky is this stock within your overall portfolio”? (Chaudhary, April, 2013).

Many fundamental theories and concepts have contributed to develop this field of finance so as to help investors make better investment decisions in the very complex and complicated financial market places. The rapid new development in this field is expected to improve the efficiency and predictive power of investors' behaviour and the entire financial markets in the future as well. Since behavioural finance is at its infant stage of development, much more theoretical analysis and empirical testing

would add on more strength and strong evidence to establish it well. I would like to mention at this juncture that, this is not an end to my research, in fact it's a founding stone explore the field and carry the work forward. In future, I would like to work on how behavioural biases influence the investors hailing from different classes like gender, region, literacy, and other aspects to think on, that can add to the existing knowledge of literature of behavioural finance field.

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