QUALITATIVE STUDY TO FIND THE BEHAVIOR OF INDIVIDUAL INVESTORS IN EAST JAVA, INDONESIA

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ABSTRACT

This study responds to the separation of the rational behavioral perspective and the irrational behavior perspective on the Behavioral Finance through the identification and investigation of how investors behave when making investment decisions. Researcher is interested in doingan explorative identification and investigation on the behavior of investors when making investment decisions. The perspective of neuroeconomics is used as tool to analyze the phenomena. This research uses qualitative postpositivism paradigm with Grounded Theory method. The proposition successfully constructed in this study are for as follows: Cognitive or affective behavior of individual investors in making investment decisions generated by the response of dynamic brain regions. The regions are orbitofrontal cortex (OFC), the ventromedial prefrontal cortex (vmPFC), the dorsolateral prefrontal cortex (DLPFC), anterior cingulate cortex (ACC) and the amygdala in assessing the consequences of events market and its resources.

Keywords: Investor Behavior, Behavior Finance, Grounded Theory

INTRODUCTION

Behavioral Finance states that the behavior of investors in making investment decisions is the interplay between cognitive (rational) and affective (irrational) systems. This interaction could either collaborate when both systems are running in the same direction or compete in which one of the system become dominant over the other. In the end investor is seen as an entity that is learning, adapting, evolving, sensing the environment, processing information, acting and updating its internal condition through the interplay of rational and irrational potential. This is demonstrated in certain circumstances when investors will behave more rationally while in other conditions investors may behave irrationally or balanced.

Yu and Lin (2007) suggests that the contribution of neuroeconomics in identifying economic behavior is to identify the substrate[1] in brain areas related to economic concepts associated with psychological functions. Analysis of physiological systems of the brain, particularly the prefrontal cortex area (central region of cognitive) and amygdala (central region of affective) as well as dopamine and serotonin compounds provide a coherent view of how the brain make decisions and influence behavior. Investors behavior, according to Camerer et al. (2005), requires neurons fluid produced by the interaction between cognitive and affective systems

The brain prefrontal cortex area is involved in the planning of cognitive behavior (controlled system) individually and socially, as well as expressing personality. Prefrontal cortex has the ability to store memories, draw general conclusions from specific data and predict the consequences of actions. Camerer (2005) refer to it as the brain network operation center for decision-making.

The brain area involved with affective behavior (automatic system) is the amygdala. Located in the medial temporal lobe of the brain, the amygdala plays a key role in primary emotions such as fear and pleasure. Furthermore, emotions such as anxiety, depression, narcolepsy and post-traumatic stress are also processed by the amygdala (Camerer, 2005). The brain prefrontal cortex and the amygdala area is what works collaboratively and competitively or negate each other in generating behavior.

Pompian (2006) explains that investors cognitive errors are the implications of weak activation of the prefrontal cortex. Damage to the prefrontal cortex caused by accidents and natural processes such as aging, caused investors ability in structural thinking and long-term planning to rapidly decline. Furthermore, Pompian (2006) explains that when the market fell, investors may panic and fear. Expectations not met and losses have increased brain serotonin levels in the amygdala region resulting in anxiety and depression that can cripple the prefrontal cortex of investors, especially in the ability to asses advantages and disadvantages.

The limitations of neuroeconomics is in the method to identify the behavior, both behavior dominated by cognitive or affective potential and the potential for collaboration between the two. This limitation is related to the degree of difficulty when it is done by economists themselves without collaborating with neuroscientists. This condition might not be a significant obstacle for those scientists who are in the developed countries with adequate facilities.

It then becomes different if the research is conducted in developing countries that do not have access to high technology and collaboration among scientists of different scientific specialties. Therefore, the study and research of neuroeconomics are still limited in the developed countries. But neuroeconomics perspective in identifying the potential of the human brain structure, gives a new color to the development of financial theory, particularly the behavior of economic decision-making that is more comprehensive and waiting to be explored further.

Therefore, one of the interesting study in the field of psychology that can help and support neuroeconomics is coping theory. This theory study how a person faces, adapt and resolve situations that lead to stress. Coping theory can be used to

[1] Compounds that experience changes by the work of enzyme

identify human behavior when faced with a problem. Therefore, coping is well known in various research studies to detect behavioral psychology along with psychological factors underlying the behavior.

Lazarus and Folkman, scientists in the field of psychology, in 1984 introduced the model of stress and coping process called transactional model. Transactional model is a framework to identify the process of coping with stress. Investor behavior when identified in the theoretical context of transactional model will react to stressors through cognitive processes and emotional response by assessing the stressor consequences against them, their resources and their investment decision-making. Investors are in a relational process between themself and stressors to identify whether the event is a challenge or a threat, then the investor will build certain transactional strategy. Transactional strategies are actions taken by investors as a result of cognitive processes and emotional responses to confront and resolve problems (coping). By identifying transactional strategy, we can study both rational investor behavior (maximal utility) and irrational investor behavior (overaction, underaction, achoring and ajustment bias, etc.).

Learning and understanding the situation that stimulates the psychological failure of investors is useful in evaluating and refining the traditional financial theory. Especially when the portfolio theory developed by Harry Markowitz explains how a rational investor should create an optimal composition of investment portfolio by considering fundamental informations such as the expected return, volatility and portfolio evaluation. It turns out that recent studies indicate that investors emotional has an impact on behavioral biases so that the composition of the portfolio is no longer based on structured and systematic analysis and evaluation. Based on what has been described above, researcher is interested in identifying and investigating exploratively the behavior of investors when making an investment decision.

Researcher believes that the identification and investigation of the behavior of investors can not be captured by a remote study. It is not possible to reach or see the truth if researchers just stand behind the scenes without being directly involved with the object. Guba (1990: 18) states that "Reality exist but can never be fully apprehended. It is driven by natural laws that can be only incompletely understood." Therefore, researcher in this study establish an interactive relationship with the object of study, however it should be noted that, researcher should be as neutral as possible and still seek minimal subjectivity. Grounded Theory was chosen to be the analysis of the behavior of investors as well as the psychological factors involved in such behavior.

LITERATURE REVIEW

From Behavioral Finance toward Neuroeconomics

The main pillars of success in investment decision making is psychology (Mionel, 2012). Psychology is the science that aims to discover, understand and explain human's personal, nature, behavior and mental processes (Bishop and Trout, 2005). Furthermore, Bishop and Trout (2005) stated that psychology studies how individuals influence each other, how information affects the individual, and understanding personality characteristics that tend to change from time to time. Mionel (2012) believes that the behavior of economic agents in the financial markets is influenced by personal features (mindset, sense and action), expertise in trading (tactical awareness, tactics and mental) as well as stress management.

Behavioral finance provide a different approach in the realm of financial theory by elaborating financial and psychology in detecting the behavior of investors in financial markets. Behavioral finance attempts to identify and study the psychological phenomenon of human beings who "work" in the financial markets (Pompian, 2006). Psychological effect on investors' behavior was studied in 1950 with findings that show the behavior of investors is not always oriented to utility function. The effects of psychological biases color decisions so information that is categorized as good news is not always being responded positively. Some examples of the behavior described in behavioral finance is overconfidence, anchoring and adjustment, representative, etc.

DeBondt and Thaler (1995) describe irrational behavior especially emotional as behavior that appears under conditions of fear or pressure while avoiding the pain of the previous decision-making errors. While trying to avoid pain what happen is an error that is much worse than before. Ledoux (1994) explain that irrational behavior comes from biological and chemical structures of the brain that is connected to the "brain's fight".

The mechanism of human brain does not realize that the fear it was actually created by themselves and automatically would go in defense, so when an individual is in trauma by the mistakes of the past, they are generally reluctant to learn because they are being defensive. In the end, the result is an inability to respond to feedback and changes that when it comes to investment decision, the emotional mechanism was put forward. Emotions such as greed and fear play a role in the investment decision-making errors. Cognitive biases and heuristics lead investors to falsely analyzing any new information that they take an overreaction or undereaction reaction (Abhijeet, 2005).

The development of sub recent studies of behavioral finance, which discusses in detail how brain system's work, that is associated with the behavior of economic agents in making economic decisions is referred to as neuroeconomics. Camerer (2005) explains that neuroeconomics is a subfield of Behavioral Finance (see also Pompian, 2006). This science is still relatively new and a synergy between psychology, neuroscience, and economics to find a better model of the decisions, interactions, risks and benefits.

Neuroeconomics: Elaboration Interdisciplinary Theory

Neuroeconomics is a study related to microbiological mechanism on brain rational and irrational areas function in generating economic behavior. This study uses neurotechnology to analyze the financial markets through the observation and understanding of behavior of economic agents in the financial markets. The main goal of neuroeconomics is to get a better understanding of economic agents' behavior in the market by identifying psychology biases that affect the trading behavior and the outcome of such behavior associated with the working mechanism of the brain.

Neuroeconomics assumes that investors have a psychological differences that affects the ability to produce a rational decisions, build a portfolio design, analyzing market information and decision making. It is suspected that psychology give a very significant impact on behavior in economic decision making in financial markets. The behavior in responding to informations and decisions of economic agents in the financial markets could never be simplified in respect that any given human behavior will collide with the potential structure that will always be a black box (black box) to the observer. Exploring

how brain's neural networks works when behavior reflects a certain psychological biases, provide a great opportunity to open investor's behavior that was still a 'black box' until now.

Neuroeconomics as an interdisciplinary approach uses methods that have been utilized by neuroscientists to analyze the workings of the brain such as measuring the movement of a single cell, study damages to the brain (decreased brain performance), and brain imaging technology. Most depictions of the brain involves experiment that comparing each participants when carrying out two different tasks. Areas of the brain that are active at certain tasks will be clearly defined. The result would show brain areas can collaborate and compete with each other in decision making. Logothetis et al. (2001) explains that there are three methods used to describe the working brain mechanism, namely Electro-encephalogram (EEG), Positron Emission Topography (ERP), and Functional Magnetic Resonance Imaging (fMRI).

EEG is a method of using electrodes placed on the scalp to measure the stimulus in form of events and response to the events through electrical activities. Positron Emission Topography (ERP) is done by measuring blood flow in the brain as a proxy for neural activities that causes an increase in blood flow. Increased blood flow in the brain showed a response to an event.

Functional Magnetic Resonance Imaging (fMRI) according to Camerer (2006) is the current approach in measuring brain activities when responding to an event. fMRI works by tracking blood flow to the brain using magnetic changes of blood's oksigensai[2] properties. Simultaneously, the tool will record the neural processes when subjected to magnetic changes when responding to an event. Egidi and Nusbaum (2012) refers fMRI as localizer tasks that have the ability to identify areas of the brain when it responds to certain types of stimuli or psychological processes such as specific physiological response to a specific event.

Neuroeconomics limitation lies in its method to identify the behavior, both behavior dominated by cognitive or affective potential as well as the collaboration potential between the two. This limitation is related to the degree of difficulty when it is only done by economists without collaborating with neuroscientists. Perhaps this condition does not become a significant obstacle for those scientists who are in developed countries with adequate facilities.

It is different when the research is conducted in developing countries which do not have high technology and access to collaborate among scientists with divergent scientific specialties. Therefore, the study and research of neuroeconomics is still limited in developed countries. But neuroeconomics perspective in identifying potential work structure of the human brain gives a new color to the development of financial theory, particularly in behavior of economic decision-making that is more comprehensive and waiting to be explored further.

Collaboration and Competition Two Brain Systems

One of the important concept in neuroeconomics is referred to as the working potential of the brain in decision making. This potential interacted between two different systems. These two such systems have a variety of terms (terminology) but refers to the same concept. Shiffrin and Schneider (1977) refer to such systems as Automatic and Controlled Processes, Epstein (1994) describes these two systems as rational and experiential systems, Sloman (1996) associative and rule-based systems, Evans and Over (1996) implicit and explicit systems, Metcalfe and Mischel (1999) hot and cool systems, Stanovich (2000) and Kahneman (2003) refer to it as System 1 and System 2, Lieberman (2003) refer to these two systems as Impulsive and reflective systems, and Frank et al. (2009) referred to it as deliberative and automatic system.

Deliberative system in this case represents a cognitive or rational potential while reflective system represents an affective or irrational (emotional) potential. This illustrates that behavior of an individual in making economic decisions are influenced by rational and emotional. Bavel et. al (2012) describes the characteristics of an affective (reflective system) which is always growing or evolving, automatic, fast processed and requires minimal cognitive resources. This system serves as a habit, in which there are emotions and intuitions that are programmed by an innate instinct which makes it difficult to control.

Contradictory with cognitive (deliberative system), characteristics of this system is that it is slow, it can be controlled, analytical, and demanding cognitive potential to the fullest. Deliberative system potential allows one to evaluate, analyze, and synthesize to make a decision. Kiviniemi et al (2007) suggested decision-making in neuroeconomics perspective is an associative process between rational and irrational. Concrete behaviors, activity of choosing, predict the most appropriate action for the future is an interrelation of cognitive and affective responses (Deyreh, 2012; Kiviniemi and Bevin, 2008; Wrase et al., 2007).

Both systems that have been describedabove sometimes works in collaboration and often competing. Collaboration does not indicate independence but an intact relationship. Reflecting the same thinking portion that led to a balanced behavioral patterns between rational and emotional. While competition, shows the fact that there are two different systems in the brain that encourage behavior toward the opposite direction, competing for power to control the other.

Emotional is not always beneficial and or detrimental to a decision. The influence of both negative and positive emotions depends on situations in the market. Excessive negative emotions cause behavior to be contaminated by psychological biases so much that it becomes irrational. In contrast, positive emotions strengthen the activation of deliberative system that the it creates harmony between the rational and the emotional behavior. In his study, Damasio et al. (1996) states that individuals with minimal cognitive but lack affective ability will have trouble making decisions and often lead to poor decisions. However, when affective occupies too much portions and reduces cognitive, the more wrong decisions will be made. Therefore, it is essentially required to collaborate or harmonize between the two systems to produce a correct decision.

Research Design

Grix (2004) emphasizes the importance of understanding philosophical foundations before conducting research. This is due to the great influence of how one views the social reality (paradigms) to the method or the way they do research to uncover social reality. This study draws attention to theory falsification, theory improvement or theory refinement of the previous theory. Falsification look from the error perspective by considering that a theory cannot have a perfect or absolute truth. Every effort is made to prove the error and then improve or refine the theory. Falsification is the ontology characteristic of postpositivisme and critical realism views.

[2] To address the need of **oxygen** in the body

The focus of this research is exploration, identification and investigation of the behavior of investors when making an investment decision. This study presents concepts based on real data about the behavior of investors when making an investment decision. Conceptualization is built into an integrated pattern developed from categories. The end result is a new generation of behavioral finance theory, especially the behavior of investors when making an investment decision. In accordance with the focus of the research, the research design used is qualitative method of grounded theory approach. Grounded theory is considered appropriate to be used to explain the real behavior, which is then encapsulated in a theory about a behavior that can not be explained by existing theories.

Grounded theory in the study of critical realism strengthens the processes taken by the mind to arrive at a universal concept (abstraction) through mediation between theory and practice. This is supported by two reasons, firstly, developing theory through improvement or creating a theory with critical realism should be based on human experience evidence so that the process of abstraction does not occur in a vacuum. The theory developed must be "removed" from the observed phenomenon. Secondly, the implementation of critical realism study, regarded as theory searching, is much broader than the act of sampling, involves intensive empirical investigation of various subjects found in the phenomenon. Both of the above reasons, can be fulfilled by grounded theory where this method is useful in critical realism study because it has an abstraction function and involves the investigation of the cause and effect mechanism in a real phenomenon.

Research Site

This research was conducted at securities firm PT. RL Tbk., PT. VB Securities, PT. MS Securities and PT. DS securities located in the three largest cities in East Java, which are Surabaya, Malang and Madiun. The location of study was choosen for several considerations: first, the securities firms have a community or informal association of individual investors. This community is very important because most of the investors were active investors, which means that these investors participate directly in the analysis and investment decisions. Investors community in these four securities firms periodically schedule time to gather and socialize. In addition, these community periodically conduct analysis and direct transactions in securities firm. Second, the five securities firms have the largest number of individual investors in East Java. This makes it easier for researcher to carry out sample selection.

Determination of Informants

The overall informants in this study are 50 people with an age range of 23-65 years. In line with the principles of grounded theory, all the informants will be filtered and reduced to a few informants who are considered to have a wealth of research supporting data. Nevertheless, the whole informants would be involved in the constant comparison of the open coding and selective coding stage.

All of the informants have been investing a minimum of 5 years up until the time of this research. They are also active investors who historically have adequate knowledge in the field of capital markets. This enriches their experience in dealing with the complex and intricate dynamics of the market. Informants are all active individual investors that often act fanatically. They read and analyze everything related to investing and actively participate in the investment communities. Informants are active individual investors who are constantly learning on how to read financial statements, market predictions, economic analysis reports and various forms of technical analysis.

Although these informants are official customers of securities firms, they do not fully hand over the investment portfolio to their investment manager. These informants remain a major controller of their investments and only took the investment managers suggestions as consideration, not as the only decision-making tool. Informants have the ability in technical analysis to estimate the movement of stock prices in the future and recognize pivot points properly.

Informant Sampling Techniques

Samples in grounded theory are the phenomenon inherent in subjects which could be the behavior of people, information and objects. The main data sources in this study are the behaviors of investors in response to the market informations and in investment decision-making. The phenomena that would be investigated are the phenomenon related to the focus of research which are the behaviors of investors in five securities firms based in three largest cities in East Java. Therefore, this study emphasizes the careful selection of samples that are relevant to the purpose of this research in which the sampling is done through a series of specific traits and characteristics.

Moving on from that, the collection of data in this study uses nonprobability sampling particularly purposive sampling. The main objective of purposive sampling is to produce a representative sample of the research objectives through the establishment of the sample characteristics. In the purposive sampling stage, informants which will be subjected to the research are investors who are customers of the five securities firms in the three largest cities in East Java. All of which is a securities firm officially registered in the Indonesia Stock Exchange. The number of informants who meet these criteria of the sample are 30 people. In the data coding and analysis process, especially at the stage of theoretical sampling, these sample may be distorted because at this stage researcher will choose some investors whose behaviors are very prominent and represent risky investment decision behavior

Data Analysis

This study uses grounded theory to study the behavior of investors in investment decision-making. Grounded theory was chosen to be the analysis tools of the behavior of investors as well as psychological factors involved in such behavior. The characteristics of grounded theory is the interconnectivity between data collection and data analysis.

Researcher conducted an analysis of data by managing information in the form of words, sentences, language and meaning that are interrelated. Researcher regulate and reduce the data into a theme or essence which in turn becomes the categories to construct the theory. The researcher challenges lies in the work related with large amounts of data in the form of text

and oral that have several meaning in the individual and social levels. In accordance with the approach chosen in this study, the following are the stage of data analysis according to grounded theory:

a. ***Open Coding***

Researcher establish initial categories of information about the phenomenon under study by filtering data (obtained from interviews, observations, and notes and memos) into respective relevant type. Themes and categories can be developed in accordance with the addition of data obtained and at the same time part of or all of the categories may further be expanded with sub categories as a detail to support existing categories.

b. ***Selective Coding***

Researcher choose one of the existing categories and position it as the core of the phenomenon being studied. All the other categories are else connected with the main core categories based on the correlation there is. The relationship between these categories form a conceptual framework that is ready to be reinforced with new data. These new analyzed data would further strengthen the relationship such as causal factors (factors that affect the main core), influential and contextual factors (situational factors that affect the general or specific strategies and consequences), and strategies (actions taken in response to the core), and so on.

c. ***Theoretical Coding***

Researcher then conduct a narrative process of the conceptual framework which has been saturated. This process of narrative or storyline is an abstract description of the process under study. In other words, this stage is the process of unification and refinement towards a proposition that is ready to be strengthened by relevant literature studies.

Results and Discussion

Findings Based of the *Open Coding*

The open coding stage begins with the verification and coding of the raw data (interview transcripts, recordings, notes and memos) to be arranged into strings of separate facts. Pieces of data are separated and incorporated in accordance with the theme. Next, these themes are formed by researcher into initial categories. These initial categories can then be developed in accordance with the findings of new themes. Along with the formation of the initial categories, part of or all of the properties are enriched with properties (sub-categories) which are data details that support categories. The following table shows the composition of the initial open coding categories:

Table 1.Preparation of Initial Category

No	Sub Category	Preparation of Initial Category
1	Macroeconomic conditions is Prospective Industry Characteristics Analysis is Prospective Performance Analysis of Financial Statements is Good Character Analysis Market is Healthy Character Analysis of Stocks is Prospective	Consequences Challenge / Opportunity
2	Macroeconomic conditions is not Prospective Industry Characteristics Analysis is Not Good Performance Analysis of Financial Statements is Not Good Character Analysis Market is Unfair Character Analysis of Stocks is not Prospective	Consequences Threath / Losses
3	Analysis of Funding Most Idle Money Analysis of Funding Sources Small Part of Debt Analysis of Access to Information is Easy	High resource
4	Analysis of Funding Source is a small Sebagain of Idle Money Source of Funds Analysis Using Large Sebagain of Debt Analysis of Access to Information is Difficult	Low-resource
5	Dollar Cost Average Behavior Growth At a Reasonable Price Behavior Buy and Hold Behavior Can Slim Behavior Income Investing Behavior Bottom Fishing Behavior Cut Loss Behavior	*Problem Focused Coping*
6	Loss Aversion Behavior Overconfidence Behavior Representativeness Bias Behavior Overreaction Behavior Cognitive Dissonance Behavior	*Emotional Focused Coping*

	Anchoring and Adjustment Behavior	

Selective Coding Stage

The selective coding stage that has been done by researcher begins with the identification of the core category or potential categories. The core category at this stage becomes clearer which is developed through densification and could potentially explain most of the category variation of the concern to the participants. This process refers to the restriction of the initial category towards several core categories that have guided researcher in subsequent data collection and analysis, so that the study becomes increasingly focused on the social processes present in the core category. Social processes are the main focus that are discovered in the relationship between the core category.

The results of the investigation and exploration have found four types of phenomena or conceptual framework that shows the relationship between the three core categories above. The four types are as follows:

1. Investors assess information as a gain signal. Furthermore, investors have great resources. This stimulates a high ability to control the market situation.
2. Investors assess information as a gain signal. Furthermore, investors have little resources. This stimulates a low ability to control the market situation.
3. Investors assess information as a loss signal. Furthermore, investors have great resources. This stimulates a high ability to control the market situation.
4. Investors assess information as loss signal. Furthermore, investors have little resources. This stimulates a low ability to control the market situation.

Theoretical Coding Stage

Theoretical coding is the analysis process of the categories that have been reflected in the saturated conceptual framework, to be developed in the conceptual relationship and relevance to literature. The analysis is described in a narrative scheme (storyline) that describes the conceptual relationship of the categories between one another. When multiple interconnected saturated categories within the conceptual framework are reconceptualized, then soon the proposition sketch appear. Researcher conducts a process of conceptualization in the form of the relationship of the saturated categories between one another to be integrated into a theory. This stage provides a more integrative scope, a broader picture and new perspectives that becomes an umbrella for several saturated categories relationship. The proposition successfully constructed are as follows:

1. Information that provide a gain signal, great resources, high ability to control the market and a sense of pleasure and optimism, stimulates maximum activation of the orbitofrontal cortex, ventromedial prefrontal cortex, dorsolateral prefrontal cortex and anterior cingulate cortex thus undermining the amygdala work. Therefore, investors tend to behave wih maximum cognitive ability and minimum affective ability.
2. Information that provide a gain signal, little resources, poor ability to control the market and a sense of disappointment and sadness at moderate levels, stimulates the orbitofrontal cortex, ventromedial prefrontal cortex, dorsolateral prefrontal cortex and anterior cingulate cortex more in comparison to the amygdala. Therefore, investors tend to behave cognitively with limited affective ability.
3. Information that provide a loss signal, great resource, high ability to control the market and a sense of fear and arrogance, stimulates the amygdala more in comparison to the orbitofrontal cortex, ventromedial prefrontal cortex, dorsolateral prefrontal cortex and anterior cingulate cortex. Therefore, investors tend to behave affectively with limited cognitive ability.
4. Information that provide a loss signal, little resources, poor ability to control the market and a sense of panic, fear and anger, stimulates maximum activation of the amygdala thus weakening the work of the orbitofrontal cortex, ventromedial prefrontal cortex, dorsolateral prefrontal cortex and anterior cingulate cortex. Therefore, investors tend to behave wih maximum affective ability and minimum cognitive ability

Proposition I

The first proposition is a result of data exploration that show how investors behave when they assess information provides a gain signal while they have great resources. In this situation the investor has a high degree of control of theirself and the market. In the end the behavior of the investor in investment decision-making is wih maximum cognitive ability and minimum affective ability.

Viewed from the standpoint of coping theory, cognitive behavior have behavioral characteristics based on problem focused coping or problem-based solutions, while the affective behavior have behavioral characteristics based on emotional focused coping or emotion-based solutions. Cognitive or controlled systems represent rational behavior such as memorizing, understanding, analyzing, synthesizing, evaluating, and applicating. In the other hand, affective or automatic system contains behaviors that emphasize aspects of feelings and emotions such as interests, attitudes, appreciations, passions and how to adapt.

Relying on the theory of coping, problem focused coping or problem-based solutions are rational behaviors of humans in solving problem. Instead emotional focused coping are irrational behaviors in solving problems (Chang et al., 2004). Lazarus and Folkman (1984), Folkman and Moskowitz (2000) and Folkman (1992) states that one of the characteristics of problem focused coping or problem-based solutions is to maximize what is desired. This is triggered by the assessment carried out by a person against themself, that they are able to perform high control of an event because of the resources they have and the consequences of events encountered are challenges (profit, challenge, enjoyment, etc.).

Efforts aimed at resolving and managing the problem, including the gathering and analyzing of information, making plans to deal with the problem and action-oriented. The first proposition is a representation of these behavior, such efforts are focused on how to benefit from the events in the capital market.

The aim of investors in the first proposition on their investment portfolio is the greatest advantage they can have. They are able to master, manage, and learn quickly in the event of an error in one portfolio. For example, investors will easily change from growth at a reasonable price strategy to can slim strategy when they cannot find stocks that have good growth followed by

an optimal price. As long as company EPS increases by 25% compared to the previous period and have a consistent earnings growth, investors will buy their shares although their PEG is close to 1.

Their strategy can be seen step-by-step, either in buy and hold, income investing, bottom fishing and other ways, that always begins with the analysis, synthesis and evaluation of both fundamental and technical information. Investors try to avoid biased thinking patterns that comes from panic and doubt. Exploration of up to date informations with careful steps undertaken by the investor aims to obtain maximum results.

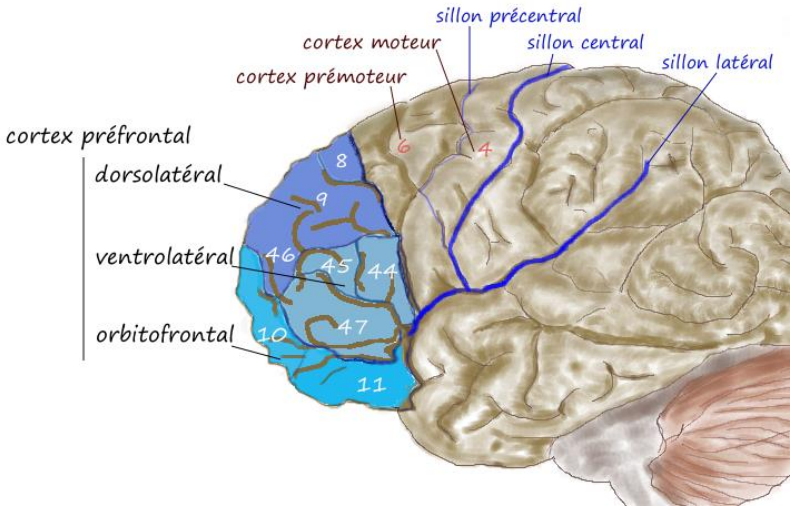
Connected with the first proposition in this study, investors use analysis based thinking to reap benefit in the form of investment gain on which they run. The main characteristics shown by both the results of interviews and observations of behavior is to choose a strategy based on the analysis, synthesis and evaluation of market information. The purpose of investment in this situation is choosing a strategy to gain as much as possible.

The decision is characterized by the use of a logical and structured approach to decision-making. Collection, assessment and evaluation are all done logically. Investor in collecting and analyzing informations tends to focus on details but are comprehensive. That is, they not only look from the perspective of macro-economic, market ratios, financial statements and technical analysis but also on other aspects such as competitors, company products and management. This reveals their awareness to be responsible and to control excessive confidence attitude in the face of market challenges.

Prefrontal cortex (PFC) has a major role in the cognitive system specifically to maintain and manipulate information. PFC is also believed to detect conflicts and implement cognitive control operations by managing non-routine challenging information. Despite of this, many experts agree that PFC also has a role in affective system.

Regions of the prefrontal cortex can be described as follows:

Figure 1. Prefontal Cortex Area



PFC is not a homogeneous structure but is divided into several regions based on functional specialization, cell structure and connections. This includes the dorsolateral prefrontal cortex (DLPFC), the anterior cingulate cortex (ACC), the orbitofrontal cortex (OFC) and the ventromedial prefrontal cortex (vmPFC). The main function of PFC is indeed focused on cognitive, particularly the DLPFC region that reflects the consciousness purely. However, many data shows that cognitive and affective are integrated in the lateral PFC section (LPFC) which are OFC, vmPFC and ACC.

Region of the brain that plays an important role in situations of controlled system or maximum cognitive domination is prefrontal cortex (PFC), especially the orbitofrontal cortex (OFC), the ventromedial prefrontal cortex (vmPFC) and the dorsolateral prefrontal cortex (DLPFC). Recent research has shown that there is a very close relationship between pleasure, happiness and the like with cognitive strengthening in analytical tasks.

When areas representing cognitive work optimally or have greater dominance powers, affective areas roles are weakened so that they are shaded by cognitive potential. The behavior of a person in this situation is still in the category of logical or rational attitude

Proposition II

Refering to the coping theory, cognitive behavior with limited affective is reflected by the collaborative efforts between problem focused coping and limited emotional focused coping. Lazarus and Folkman (1984), Folkman and Moskowitz (2000) and Folkman (1992) states that a person in this situation tries to utilize its resources effectively and efficiently to capture the opportunities that exist. This is caused by the realization that, the resources they have to face the consequences of which are thought as profit are small, so that one is not able to perform an action that exceeds its resources despite the great opportunities in sight.

This awareness stimulate the person to keep studying the events or occurrences as well as the consequences of the incident against him. It is found in the data of this study that corroborate the second proposition, in the form of investor behaviors that are still trying to learn information through analysis and evaluation of the movement of the stock price charts and fundamental news. They are more careful and not aggressive to response to the gain signal. Profit taking is one option that can be done when there are resources that can be used, starting with a wait and see attitude while observing the development of the market to determine the right moment for profit-taking.

This suggests investors attempt to optimize its resources by performing analysis, evaluation and synthesis, but only up to its capacity. This reflects the active cognitive potential that is still maintaining a logical way of thinking, shown by the self-awareness of its capacity making them cautious in the use of resources to gain profit.

However, it should be noticed that the behavior that arises when investors are on the second proposition is not done to get the maximum gain, but for optimal gain. Zuboff (1988) states that when an individual is at a small power source in the middle of a situation that gives great opportunity consequences, then the individual is likely to behave in the most optimal way. That is, individuals are satisfied with results that are good enough though not the best.

This behavior can be found in this study in which besides cautious and non aggressive, but also build and evaluate investment alternatives on a regular basis to determine if there were any prospects of investment to be done. This means that although the chances of gain are great, but the limitations of their resources also resulted in a limited investment options that also limit their gain. In the end, investors must think of other alternatives that may be used to gain profit. This for example can be shown in a sell decision if there are still prospect stocks "held" and not take the decision to buy in advance although there are still investment targets. If the results of the analysis indicates that their resources are still able to regain profit, then the allocation they use to buy would be a maximum of 50% of available cash.

In addition, investors in their analysis, synthesis and evaluation on informations are aimed at the target that has been set at the beginning and not for other options. Alternatives which they set are to achieve the initial target (optimal gains) and do not pay attention to other opportunities. This is due to the limited capacity or resources at their disposal so that they feel that there are nothing else to do except with the capacity for which they have. They develope alternatives periodically but will stop at a good first choice. This behavior shows the obejctive is for a good enough profit although not the best or optimal although not the most optimal.

Bazerman and Moore (2009) states that when an individual is in a opportunity consequences but their abilities are low, then the cognitive work would not be at maximum. That is, the analysis they can do are limited by the resources they have, although there are still a substantial amount of residual happiness or profit that they could have get. Therefore, the behavior of individuals in this situation is also characterized by irrational behavior despite that the irrationality is limited.

Limited irrational behavior can be seen in the results of this study in which investors were conservative in looking at new information. Small resources in the face of a great opportunity raises the investor self-assessment. They feel unable to take advantage of new information that comes because the much larger gains can not be obtained. Investors are increasingly burdened to receive new information that contains gain opportunities that they are unable to reach, causing apathy towards the new information. This apathy encourages investors to believe more in the predictions they did earlier compared to the new information. They would sort through the new informations that are considered in accordance with the predictions they had previously set.

The results of this study in the second proposition shows how cognitive and affective systems compete. Investors behavior is likely to be rational but also colored by limited irrationality. This is because the consequences assessed from both internal and external informations does not cause anxiety, panic or other negative stimuli. Therefore, cognitive is victorious in this competition, this is proven by the system ability to control the affective that result on a rational behavior with a limited irrationality. This is confirmed also by the various studies that have been described above that the mechanism of affective and cognitive brain regions compete and collaborate in information processing. The end result of this process is implemented in behavior. The nature of process and behavior continues sustainably and continuously. When information does not contain a negative content, cognitive function is still able to control the tasks of analysis, synthesis and evaluation and focus on planning and goal.

The more negative the information that is being processed, the more it causes anxiety, fear or panic. This situation is difficult to control by the cognitive system in this case the prefrontal cortex (PFC), especially the orbitofrontal cortex (OFC), the ventromedial prefrontal cortex (vmPFC) and the dorsolateral prefrontal cortex (DLPFC). Conversely positive information content reinforce the cognitive work. This causes the activation of the cognitive system to be stronger and able to regulate and control the negative emotions generated by the amygdala. The sense of disappointment and sadness at the level being experienced by investors in the second proposition, are due to the inability of investors to receive the greater gain of opportunities. Investors tend to be rational behavior but also characterized by limited irrationality. This is because the consequences assessed from both internal and external informations does not cause anxiety, panic or other negative stimuli. Therefore, cognitive is victorious in this competition, this is proven by the system ability to control the affective.

Proposition III

The third proposition in this study are that investors who assess informations as a loss signal and has great resources and a high ability to control the market, tend to have an affective behavior with limited cognitive behavior. Lazarus and Folkman (1984), Folkman and Moskowitz (2000), Folkman (1992) and Stone et al. (1992) states that when an individual is in a situation that gives consequences in the form of threat or menace (loss, bankruptcy, etc.), then more the individual would behave using emotional focused coping. As described in the previous section that, cognitive behavior is the behavior that has characteristics based on problem focused coping or problem-based solutions while affective behavior have behavioral characteristics based on emotional focused coping or emotion-based solutions.

Investors experiencing self deception, is the first analysis of the behavior of investors who tend to overconfidence. This is reflected from the behavior of investors in seeking additional informations to ensure and strengthen the predictions that they have set. In this case, the investor receives the informations that is consistent with their beliefs but reject other informations deemed incompatible with their predictions. Additional information is used to reinforce their beliefs, that the predictions they have set is not wrong. The belief, that their predictions are the most correct and accurate is intended to reduce emotional distressess.

Hippel and Trivers (2011) explains that one form of self-deception is to process informations that are in accordance with their desires and reject informations that are not in line with their desires. Investors do self-deception by preventing informations that are not in accordance with their beliefs or stop searching for additional information when they are getting the informations they like. The conviction itself was formed by investors perceptual mapping constructed in their mind, in which that perceptual mapping is not the same and irrelevant to the current situation.

Self deception causes a person to be trapped in the formation of a false belief or merely imaginary (illusion) that he is superior, smarter and more powerful than others (overconfidence). Overconfidence is found within the investor when they feel that they have a more accurate prediction capabilities than others. Furthermore, investors feel that their beliefs are definitely true and relevant to the ongoing market situation.

Overconfidence is associated with investors perceptual mapping. Confidence is built by investors through their prediction set, depending on the perceptual mapping regarding the previous market information both from technical and fundamental analysis. One of the past informations that is often addressed excessively by investors (overreact) establishing a perceptual mapping in their mind are income and capital gains informations. Overconfidence is a moderating factor for investors overreact behavior in response to past earnings and capital gains. Therefore, the more overconfidence an investor gets, the more the investor overreact in response to past information. This leads to the investor perceptual mapping related to past information becomes stronger.

This behavior is found on the third propositions in which investors believe the predictions that they have previously determined based on historical fundamental and technical data. They believe despite the falling stock prices, based on the prediction that they have made, the stock price will experience a reversal or turned toward the upside (uptrend). Equating perceptual mapping with the latest turn of events or events that are not necessarily the same or even very different is the behavior of representativeness bias. Representativeness is the assessment of an event based on stereotypes. Investors tend to make investment decision based on past experience categorization in their perceptual framework.

The next irrational behavior that is found in the third proposition is anchoring and adjustment. This behavior arises when investors use their prediction as an initial or basic boundary in making investments. This is evident from the investors attitude to adamantly use their estimates as a benchmark in taking the next step of investment, because they believe that those values are the result of an accurate analysis process.

Interaction of the brain areas that represent cognitive and affective functions play an important role in behavior. The third proposition can be explored in depth by studying the mechanism of how the brain works when the behavior reflects the affective behavior with limited cognitive behavior. The reciprocal connections between the prefrontal and subcortical regions especially the prefrontal cortex (PFC) with the amygdala in emotional processing, provides a more comprehensive picture of how behavior can be dominated by affective behavior with limited cognitive behavior.

Affective system by some neuroscientists are considered as the most primitive and still filled with many mysteries part. The system is used as a basis of emotions such as fear, anger and happiness that has a strong tendency to work automatically in driving behavior (approaching or avoiding, fight or flight, and so on). Recent researches state that the amygdala is central in the responsibility of processing the emotions that are automatic. The amygdala works in managing both negative and positive emotions are not independent with cognitive areas. They work dependently and in collaboration, but also not uncommon to compete.

The amygdala has a separate set of neurons with different functions, which are neurons that represent negative stimulus and positive stimulus. For example, the amygdala neurons become active when an individual receives negative information. Furthermore, the amygdala signals automatically push emotional stimuli such as panic, fear and anxiety, and on the other hand send them through the prefrontal cortex (PFC) neuromodulators. Emotional effects produced by the affective system (subcortical regions), directly and indirectly modulate the PFC. The PFC receives the signal and responds by increasing attention or focus of the original purpose.

The greater the emotional signal strength caused by the negative information the harder it gets for cognitive performance to control emotions. If the pressure becomes greater then the cognitive function would be defeated and cause dysfunction in emotional regulation. Amygdala neurons that represent the negative stimulus becomes active when individuals receive negative information. Furthermore, the amygdala signals automatically push emotional stimuli such as panic, fear and anxiety, and on the other hand send them through the prefrontal cortex (PFC) neuromodulators. Emotional effects produced by the affective system (subcortical regions), directly and indirectly modulate the PFC. This in turn is responded by the PFC via the ACC by detecting and evaluating cognitive control. The greater the negative emotional pressures (conflict), then the more overwhelmed the ACC and other areas in the PFC get in evaluating and improving cognitive work

Proposition IV

The fourth proposition in this study are investors who assess information as a loss signal, and have little resources and poor ability to control the market, tend to behave with maximum affective with minimum cognitive. Relying on coping theory, the maximum affective behavior with minimal cognitive behavior indicates that most investors are irrational with minimal rationality. They use more emotional focused coping in the resolution of issues that have implications on the concrete behavior.

Market crashes are sharp and dramatical decline in stock prices resulting in significant losses of investors. This situation involves domestic or global economic events that has an unfavourable impact towards the capital market. The fourth proposition reflects how the behavior of investors who have little resources respond to market crashes. The data found in selective coding stage show that, in this situation investors respond emotionally (panic, anger, anxiety, fear and greed). These are very influential on the behavior of investors in making investment decisions. Therefore, the fourth proposition found so many irrational behaviors such as loss aversion, overconfidence, representativeness bias, anchoring and adjustment, cognitive dissonance type 1 and 2 as well as some other irrational behavior.

Mattos et al. (2006) found that individuals who are faced with the decision-making under risk levels are large, tends to heuristic simplifications. Heuristic simplification arises when a person automatically or unconsciously use their subconscious (perceptual mapping) in information processing due to the limited capacity control (cognitive). One of the triggers of heuristic simplification is fear, panic, anger and greed. Emotional situations cause individuals to choose alternative not based on the analysis reasons of concrete facts and information, but rather on what is constructed on their mind (preceptual mapping). Individuals who are in a situation of positive mood, tend to be more focused on the analysis of concrete and realistic facts. Conversely, individuals who are in a negative mood, tend to focus on what they have in mind.

One of the effects of heuristic simplification is self-deception. Forms of self-deception behavior that could be found in the fourth proposition as has been mentioned above are loss aversion, overconfidence, representativeness bias, anchoring and adjustment, cognitive dissonance type 1 and 2 as well as some other irrational behavior.

Loss aversion behavior can be seen from the attitude of excessive fear when suffering a loss. This behavior appears in the results of research of the fourth propositions in which investors become antipathy toward losses. Investors are more focused on the loss compared to the gain even though it could be that their portfolio designs generate profits, although small. Loss aversion is the tendency of investors to focus more effort to avoid losses rather than an attempt to gain profit. There are many behaviors that fall into the category of loss aversion. In this study, loss aversion caused investors to hold underperforming stocks (losser) for too long, otherwise they would sell too quickly stocks that are performing well (winner). These behavior of holding loser stocks too long and selling winner stocks too early in behavioral finance are called dispotition effect.

Subsequent findings of the fourth proposition of this study are, because of too much excitement on seeing gains, investors sell stocks that provide gain too early. Because their antipathy with losses, investors respond too much to profits, so that stocks should still able to provide greater gains in the next trading session are sold too early. Investors fear, that instead of getting a larger profit, they would just get a loss if they do not sell immediately. ut profit but instead sell winner stocks too early.

Shefrin (2005) explain this behavior by giving the term pride and regret. According to Shefrin, regret or remorse is an emotional feeling of pain caused by errors in the decision-making of the past and the losses suffered before.

The next irrational behavior, which is found in the fourth proposition in this study are risk aversion when seeing gain and risk seeking when seeing loss. Cognitive dissonance behavior type 1, 2 and 3 are also found in this study. Investors are experiencing conflict between their belief and the market behavior, at which the market does not move in line with expectations and market informations that show up are not in accordance with the belief of the investor. As a result, investors mutually justify each step they take and compare the strategies they adopted with the other investors.

The stronger an information signal of consequences of loss, it would be responded emotionally by the amygdala and debilitate cognitive areas such as the DLPFC, ACC, vmPFC and OOF so that they are unable to control the affective. This results in behavior that tends to be more emotional (irrational). Neuroeconomics provides an alternative view answer of why investors that are assessing information as a signal of loss consequences, while the level of resources and control are low tend to behave irrationally. This is caused by emotional responses flooding the cognitive territory so investors are not able to control their consciousness to stay focused on the purpose and design of the initial portfolio. Anxiety and panic that come from the consequences of loss and low resources cause their behavior to be aimed at the reduction of emotional distress.

Cognitive and affective connectivity in the brain, are presented in just several synapses (gap between two nerve cells) that spread like the flow of water from one area to another. Each synaptic describe the brain as a small world full of node projection groups and small nodes. The amygdala has a very broad projections, related with all the brain layers. Amygdala has the best geometric position in the topology which have complete connectivity to all areas of the brain. This provides evidence that the amygdala is at the core of affective, which integrate and distribute information (the processing of affective system) to the PFC.

When the amygdala emits an excessive emotional signals, it will have an impact on the overall cognitive region performance. Because one of the cognitive function is emotional control, then at the point where emotion is above the threshold, cognitive functions will be weakened. When an information gives a negative signal, cognitive systems weaken in controlling the conflict between perceptual mapping and analysis which should have been done. Individuals tend to use perceptual mapping more frequently due to the activation of past experience transforming into a "habit" and do them without thinking twice.

Conclusion

This study used a Grounded Theory to know how the behavior of investors when making an investment decision. Grounded Theory was chosen to be the analysis of the behavior of investors as well as psychological factors involved in such behavior.

This study has established four propositions are deprived of the phenomenon. The proposition reflects that investor behavior is the result of collaboration and competition affective and cognitive systems.

This study provides some implications. In methodology, this study provides new nuances in related research in the field of behavioral finance, Investment Management and Financial Management. During this time, a variety of behavioral research studies mostly based quantitative methodology using survey design and data akraifal (secondary) so less able to open the investor's behavior is so complex. Why is that, because of the design of the survey are generally based on the perceptions and data akraifal that uses econometric modeling and assuming determistik market.

Conceptually, research has successfully developed four propositions that can bridge the distance finance research, especially research related to rational and irational investor behavior. Proposition generated from this study indicate that the rational behavior that becomes the body of knowledge in the traditional end of the financial theories are small particles of the complex behavior of investors. Exploration involving several psychological theories and neuroeconomic provide an important contribution in the financial realm. So far most of the research on behavioral assumes that investors are rational to put other aspects deterministically.

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