AJSS

Abasyn Journal of Social Sciences
Vol (13), Issue (1), 2020.

Open Access
DOI: 10.34091/AJSS.13.1.32

The Role of Heuristics Toward Stock Market Anomalies (Finding at Individual Investors)

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Abstract

This research examines the effect of behavioral components on market anomalies in a developing country. This paper tries to investigate behavioral factors that cause to generate stock market anomalies. This study used heuristics theory to establish the conceptual model. The finding of the research model relies on the data collected from 324 individual investors of Pakistan Stock Market using a convenient sampling technique. Partial Least Square and Structural equation modeling were used to test the proposed model with the help of Smart PLS 3.0 software. Results depict that all four components of heuristics have a statistically significant effect on two classes of anomalies (fundamental and technical anomalies) at a different level of confidence and make market inefficient in two ways and take mispricing advantage. Differently, anchoring toward technical is statistically insignificant. Overconfidence has a positive significant influence on calendar anomalies.

Keywords: Behavioral Finance, Heuristics Theory, Stock Market Anomalies, Individual investors and Market inefficiencies.

Behavioral finance is an emerging field of finance, which deals with the behavior and psychology of investors and the market. Many of the behavioral factors are unobserved that may influence the investors' decision and market situation (Engelberg & Parsons, 2011). The efficient market hypothesis (EMH) states that investors make their investment decision after doing complex and proper calculations of risk and return. EMH asserts that all information is equally available for all investors and no one can earn an abnormal return. In contrast, behavioral finance theories suggest that many investors can earn abnormal returns because of the presence of anomalies. Any deviation from the EMH is known as a market anomaly. The stock market is a combination of buyers and sellers. Hence, individual investors' trading behaviors play significant roles to deviates the market from the efficient market hypothesis and leaves different classes of anomalies. It is also difficult to address all types of individual investors' behavior. Therefore, this study used some heuristics that may influence their decision and make them able to earn an abnormal return.

Problem Statement

Previous researches investigate the existence of anomalies in the market but results are inconclusive and always unanswered to address "which type of anomaly is caused by which component of behavior factors". Although, Ul Abdin et al., (2017) also investigate the mediation link of different classes of anomalies that influences the investment decision and performance. However, the objective of this study is to identify the behavioral causes of particular anomalies. The research

incorporated three types of anomalies (fundamental, technical, and calendar anomalies) that may be caused by four types of heuristics. Hence, in simple,

How heuristics of the individual investors influences the stock market anomalies.

Research Question

The broader research question of this study is to analyze the impact of heuristics on the stock market anomalies and to observe which heuristic is generating which class of anomalies.

Research Objectives

To simplify the research question, several research objectives have been established.

1. To critically observe whether the heuristics are adequate to measure the stock market anomalies.
2. To evaluate which type of heuristics generate which class of anomaly.
3. To analyze the impact of overconfidence on the three-class of anomalies.
4. To analyze the impact of representativeness on the two-class of anomalies.
5. To analyze the impact of anchoring on the two-class of anomalies.
6. To analyze the impact of availability on the two-class of anomalies.

Research Contribution

Previous studies were identifying the anomalies (Barber & Odean, 2008; Allen, Brealey & Myers, 2006; Hirshleifer & Subrahmanyam, 1998) but not examined the behavioral predictor of anomalies in the market. Previous researches investigate the presence of anomalies in the market using secondary data. However, this study uses the primary source to investigate the presence of anomalies in the stock market. This study conceptualized the stock market anomalies to measures the inefficiencies of the market. This study examines individual investors' behavior that makes the market inefficient and generates anomalies in the stock market. Asian investors are more irrational as compare to Western investors (Kim and Nofsinger, 2008). Therefore, this study is targeted the Asian investors. Further, this study adopts the primary method to measure anomalies instead of secondary data. A questionnaire is the best technique to examine the irrational behavior of individuals and the market (Kyler, 1985). Hence, this study contributes to the literature of behavioral finance to measure the inefficiencies of the market using stock market anomalies. Second, this study contributes to the method of introducing the primary source for stock market anomalies. Therefore, according to researchers' knowledge, this study is the best effort to identify the differential effects of four heuristics on three class of stock market anomalies.

Significance of the Study

This study has significant for investors who are eager to learn the anomalies and behavioral factors. They come to know some attractive descriptions and explanations. This study also helps market analysts and financial advisors to understand the fluctuations in prices and understand some significant approaches for investment in the presence of anomalies. The financial advisor will give better suggestions to their investors and help them in selecting good stocks. We applied the PLS-SEM on data using Smart PLS to measure the significance of the four heuristics on three classes of anomalies.

This paper divided into four sections. The first section contains an introduction second consist of literature review and hypotheses development. Third section consist method and procedure and the fourth section consist of result and finding. The final section consists of discussion and conclusion.

Literature Review and Hypotheses Development

Overconfidence toward Fundamental Anomalies

Tversky and Kahneman, (1974) describe the heuristics theory as a shortcut that individuals apply in the lack of data, information, and a shortage of time. The most prominent heuristic that is rapidly used in the field of behavioral finance is overconfidence. The term overconfidence is used in various fields with a different context. However, in this study overconfidence defined as, investors ponder to him a keen contributor with the believed that they can beat the market. The overconfident investor considers the changes in stock prices (Scott et al., 2003). Overconfidence can be harmful to investor's skills to choose stock for a long time (Pikulina, Renneboog, & Tobler, 2017). In a sense,

overconfident investors mistakenly focus on stock price and growth stock and leave fundamental anomalies. Overconfident individuals focus on stocks that are growing whatsoever there fundamentals are. Therefore, overconfident investors selecting that companies' stock which have a high price and rapidly growing (Scott et al., 2003). However, overconfident investors are not able to measure the speed of movement in stock prices (Cherono, Olweny & Nasieku, 2019). Individual investors give more importance to the information they acquire from their source. Therefore, overconfident individuals rely on their information, make an irrational decision, and disregard many securities' fundamental and leave anomalies in the stock market. Overconfident investors are selecting growth security (Scott et al., 2003). Therefore, investors choose the fundamentally imbalanced stock. Investors always focus on growth stocks due to the high returns.

Men do excess trading and take risks than women because of overconfidence (Barber and Odean, 2001). Therefore, men focus on the change in stock price due to relies on overconfidence. Investors believe stock price reflects all information and that increases the capacity of investors to trade (Hribar & Yang, 2011). Thus, excess trading leading the overconfident investors to focus on changes in stock price information that affect the stock market (Adel & Mariem, 2013). Therefore, overconfident investors ignore stocks' fundamentals and in result make market inefficient concerning fundamental anomalies. In short,

H1: *If the level of overconfidence increases in individuals, then the level of fundamental anomalies will increase.*

Overconfidence toward Technical Anomalies

Individuals use technical tools and techniques before decisions. It helps the investors to estimate the fluctuation in security prices in the future from the past prices. Technical analysis often called charting, as the charts show the historical prices of stocks and trends of stocks. Algorithms can be used to identify patterns of charts (Dawson & Steeley, 2003). Overconfident investors used charts of past price to make a future investment decision (ul Abdin, Farooq, Sultana, & Farooq, 2017). Therefore, overconfident investors used historical prices of stocks to make decisions. Overconfident investors go through chart patterns and historical trends because they perceive that they are an active contributor to the equity market. Overconfident investors believe their information and make an investment decision. Hence, overconfident investors frequently used technical analysis with different techniques or patterns and generate anomalies that make the market inefficient. Overconfident investor plays a major role to fluctuate the stock prices (Metawa, Hassan, Metawa, & Safa, 2019). Overconfident investor heavily relies on past trends and past prices to make a future investment. Based on their judgment, information, and experience overconfident investors used technical analysis and increase their trading volume. The trading volume of overconfident investors is increasing by the success and higher return in the past (Markus, Glaser & Weber, 2009). Overconfident investors use technical analysis as powerful techniques to earn an abnormal return or beat the market. Thus, they generate technical anomalies by their overconfident.

Overconfident investors earn an abnormal return in stock condition to release any public information (Daniel, Hirshleifer & Subrahmanyan, 2001). Hence, overconfident investors should have update information related to stock circulated in the market. Overconfidence permits investors to use the information in a very effective way to increase the returns on investment (Daniel et al., 2001). Therefore, an investor should use the information carefully as current prices and returns of stocks are positively related to the historical prices and returns of stocks that histories make investors overconfident. Hence, overconfident investors may be the main source to leave anomalies in the equity market. Therefore, the researcher hypothesized,

H2: *If the level of overconfidence increases in individuals, then the level of technical anomalies will increase.*

Overconfidence toward Calendar Anomalies

The most important anomalies are the calendar effect. Which shows high returns in January other than the rest of the year? The investors sell the losing stocks at the end of the year to avoid high taxes from their earnings and reinvest in these underperforming stocks again in January (Varvouzou, 2013). Therefore, overconfident investors sell their losing stock in December to get a higher return in January. Overconfident investors sell their losing stock with the aims that they can gain sure gain in January and result make market inefficient in terms of calendar anomalies. The higher returns on stocks are not only noticed in January but also at the start of the different tax years

in different countries (Seif, Docherty, & Shamsuddin, 2017). Hence, investors should sell their underperforming stocks to avoid taxes. The overconfidence of investors makes them believe their estimations either reasonable or not, and they buy expensive stocks which result in realizing low returns or even sometimes loss on these expensive stocks therefore at the year ended they sell (Barber & Odean, 1999). Further, Overconfident investors invest in small firms intending to get a higher return at the start of the year (Biddle & Hilary, 2006). Overconfident investors do not invest in combinations of stocks; they invest in smaller firms due to their liquidity and high returns in January that can avoid investors from high taxes (Hirose, Kato, & Bremer, 2016). Overconfident investors invest in growth stocks due to the high fluctuations in their prices and realize losses in the year-end, and sell these stocks to avoid tax (Glaser, Laibson & Sacerdote, 2002). Therefore, overconfident investors invest in a small firm in January to get recovery of losses in December and their overconfident leave calendar anomalies. The overconfidence of investors may be the source to generate a calendar effect in the equity market that makes the market inefficient. Therefore, we hypothesized,

H3: *If the level of overconfidence increases in individuals, then the level of calendar anomalies will increase.*

Representativeness toward Fundamental Anomalies

Representativeness states as a shortcut, investors give the possibility to that event which is more representative and related to its population (Tversky and Kahneman, 1974). It affects market conditions because investors choose stocks who's advertised more, have high stock prices, and high return (Chang et al., 2009). Investors will invest in the stocks whose prices were increasing in the latest time because they are expecting to be more increase in the prices of these stocks (Edmans, Jayaraman, & Schneemeier, 2017). Therefore, investors focus on change in stock prices using the representativeness heuristics in their investment decision. Most investors choose a similar stock from the market that represents the desired qualities. High return for a specific period gives encourage investors to use the previous stock price to get an abnormal return (Berger & Turtle, 2012). Investors perceive that the growth stock gave them high returns because they believe that the growth stocks' prices are always in uptrends. Investors' behavior to select the growth stocks from the market ignores stocks' fundamentals because of representativeness. Growth stocks are not a valuable investment for long-term periods (Pompain, 2011). Therefore, growth stock has more fluctuation in stock prices because of representativeness and leave fundamental anomalies. In short,

H4: *If the level of representativeness increases in individuals, then the level of fundamental anomalies will increase.*

Representativeness toward Technical Anomalies

The individuals expected that the historical pattern of stock prices represented for short periods to continue for a long period (Barberis, Shleifer & Vishny, 1998). Investors using the previous stock prices to buy the uptrend stock or sell the stock that is downward (Andreassen, 1987). Therefore, investors always make decisions using the techniques to pick security. Previous returns represented the signs that stock price increases in the future or decrease (Chen et al., 2007). Therefore, Investors used past trends to make a future decision using the representativeness heuristics.

Previous stock prices are a strong indicator of a predictor the future return (Dergiades, 2012). Investors pay their attention to the recent stock prices, stock return so, they do not grab the long-term performing stock and make unreasonable decisions (Ritter, 2003). Hence, representativeness collectively shows a strong relationship between previous stock prices and current stock prices. Thus, investors make their investment decisions after analyzing past trends using different technical methods. Investors overreact on good stock and buy them with expecting a higher return in the future due to representativeness (De Bondt & Thaler, 1995). Thus, we hypothesize,

H5: *If the level of representativeness increases in individuals, then the level of technical anomalies will increase.*

Anchoring toward Fundamental Anomalies

Sometimes individuals invest in stocks whose prices are decreasing rapidly in a short period to acquire the stock at a low price to earn a good return when prices will become high (Phung, 2011).

Investors stick to a single piece of information and make their decisions based on that piece of information that can be harmful to investors (Baker & Ricciardi, 2014). Investors do not pay attention to the long-term period of increasing prices of stocks (Mashruwala & Mashruwala, 2011). Therefore, they ignore many stocks' fundamentals and generate fundamental anomalies. Investors often buy stocks at a very high price and sell the stocks at a very low price due to believing in the beginning information of the research (Asness, IImanen & Maloney, 2015). Hence, an investor should invest in stocks by focusing on stock price and overreact to a single piece of information, and ignore the intrinsic prices of stocks and leave fundamental anomalies in the stock.

Investors make investment decisions based on anchoring and get uncertain gains or losses (Tversky & Kahneman, 1973). Investors can get the uncertain gain or losses due to their investment decisions based on the information, which can be true or false, or irrelevant to the stock in which investor is investing (Stephan, 1999). Hence, individuals act illogically in the stock market due to base on initial price, focus on price change in stock that leaves fundamental anomalies. Therefore, researchers develop the subsequent hypothesis,

H6: *If the level of anchoring increases in individuals, then the level of fundamental anomalies will increase.*

Anchoring toward Technical Anomalies

Individuals invest in stocks whose prices are continuously going high from 52 weeks to earn a great stock return (Hobson, 2012). Investors are not willing to pay the high price of a stock when its price is close to the highest past price of the stock (Colin & George, 2004). By using the chart patterns, the investor estimates the stock prices in the future. if the closing prices are higher than the opening prices of stocks in the latest period shown in the chart of stock (Kansal & Sing, 2015).Investors will estimate the stock returns using the moving averages but it will be beneficial for investors only in a short-term investment (George, 2 Colin & George, 2004). The investor will trade stocks either buying or selling at a price that is close to the past prices of stocks (Grinblatt & Keloharju, 2001). In a sense, investor heavily relies on technical analysis using the initial price as an anchor and it makes a reason to leaves anomalies in the stock market. There is a strong relationship between previous prices of stocks and future prices of stocks as taking the previous price as an anchor (Chang, 2011). Thus, Investors will not trade stocks at current prices; they will trade the stocks at the previous price. They will sell the stock if the past price is greater than the current price and vice versa (Chandra, 2012). In short,

H7: *If the level of anchoring increases in individuals, then the level of technical anomalies will increase.*

Availability toward Fundamental Anomalies

Individuals usually believe in the information that is easily available (Foster, 1973). Investors also think that provided the information that can be good for the firm and can cause an increase in stock price (Dye, 1985). Therefore, an investor considers information that realizes the firm and makes its decision. Firms only disclose the information which shows that the stock price will increase in the future from the present stock price (Verrecchia, 1983), and bad news is circulated only if they legal activity is raised (Dye, 1985). Therefore both types of information either good or bad are easily available for investors and they heavily rely on it and post their transactions. This in result generates certain irregularities in the equity market.

The tendency to react to the increasing change in stock's price is less as compared to a decrease in the change in stock's price (Kothari, Lewellen & Warner 2006). Therefore, investors in decision-making consider a change in the stock's price. Investors perceive that increasing stock price is always growth stocks (Sloan, 1996). Therefore, investors invest in growth stock to get a high return but unfortunately, they ignored many stock fundamentals such as growth stock is not useful for long-term investment. Thus, hypothesized,

H8: *If the level of availability increases in individuals, then the level of fundamental anomalies will increase.*

Availability toward Technical Anomalies

The past stock prices have a strong impact on current and future stock prices (Jegadeesh, Kim & Krische, 2004). Investors consider the change in stock price using the previous prices as an indicator to avoid losses or get a high return (Frazzini, 2006). Thus, an investor should review the past

performance of stocks before investing in them. The availability heuristic helps the investor to make their investment decisions, by remembering any incident happen in past and its effect on stock prices, which can save them from losses and make better decisions (Tversky and Kahneman, 1973). Availability has a significant effect on investor's decision-making (Baron, 1998). Investors buy those stocks that are having more consideration of people, the stock market, and media in the recent period passed (Lee, Liu & Odean, 2007). Thus, investors should invest in stocks that information is easy to recall. Investor decisions effect mostly by previous information (Chiodo, Guidolin & Owyang, 2003). Thus, investors use previous information because it is easy to recall and easily available. For this purpose, investors used the technical analysis to evaluate the previous record of the stock. Thus, hypothesized,

H9: *If the level of availability increases in individuals, then the level of technical anomalies will increase.*

The above stipulation suggests the model shows in Figure 1.

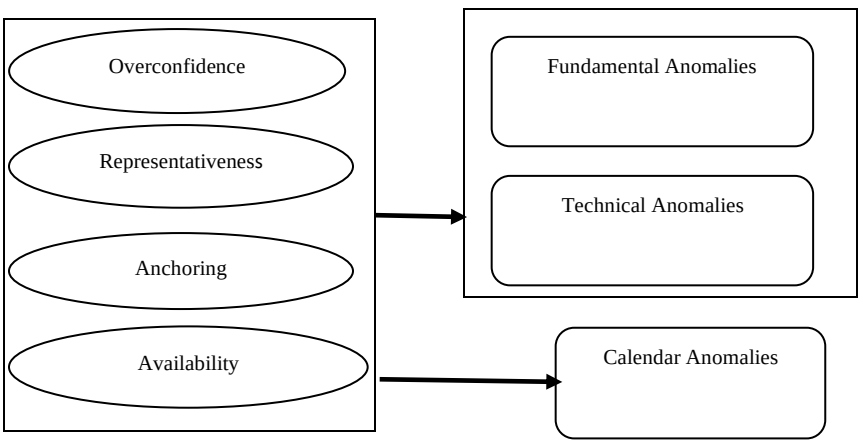

Figure 1: Hypothesized Model

Methodology

Data collection and Sampling Procedure

The targeted subjects for this research is an individual investor. A survey was used to collect the data from individual investors of the Pakistan Stock Exchange. The data was collected in eight months with the help of brokerage houses and personal references. It is not easy to target real investors in Pakistan. Therefore, with the help of the brokerage house, the researchers have arranged a different session to target the real investors. In each session, a brief introduction was given to the audience for a better understanding of the reason for the research. In the first session, researchers feel that the questionnaire should be translated into the local language also. Most of the individual investors are old age and a retired person that are the reason to translate the questionnaire. Thus, the questionnaire is translated with a forward and backward approach. The population consists of all individual investors of the Pakistan Stock Exchange. The purposive sampling technique was used to target the real individual investors. The criteria for sampling is that investors should have more than one year of experience and active investors. An eight-session, the researchers targeted about seven hundreds of individual investors. The only 371 questionnaires were collected. The response rate was reasonable (53%), comprised 94.6% (351) male, and 5.4% (20) female. Approximately about 50% of investors were aged 50-60 years with around 6-10 years of experience. The questionnaire was not considered that have higher than five missing values. Thus, the final

sample was 324. This number is reasonable for further analysis. Structural Equation Modeling was used to interpret the model using smart PLS 3.0.

Measures

This study adopted the instrument to investigate the impact of heuristics on market anomalies. This study adapted the questionnaire for heuristics with the work of Ul Abdin et al., (2017) followed by Waweru et al, (2008) and Babajide & Adetiloye (2012). This study adapted the measurement of fundamental and technical anomalies from the influential work of Ul Abdin et al., (2017). Ul Abdin (2017) introduces the anomalies to understand the underpinning mechanism that influences indirectly the investment performance of the individual investors. However, this study only tries to investigate the causes of anomalies individually and consider the three types of anomalies that were introduced by Abdin, Waqas, & Ahmad, (2019) & Ul Abdin, Sultana, Farooq, Shah, (2017). The objectives of this study are to examine the causes of anomalies. Wei-qi & Jingxing, (2018) argues that anomaly helps us to explain the stock market perception. Thus, the fundamental reason to study market anomalies is to test the market efficiency using anomalies. In investment behavior, different investors use different strategies to make an abnormal return (Schwert, 2003). Thus, examines the investment strategies that generate anomalies is the best way to test market efficiency. Previous research by (Lodha, 2014) presented the 21 related investment strategies by categorizing into three classes. The same classes are also introduced by Pompian, (2011). Schwert, (2003) claims that market anomalies should use as a major basis for their investment strategies. Consequently, it is not possible to address and measure all investment strategies. In developing countries' the individual investors are not motive to retain in the stock market because of unrealistic and unpredictable returns. So, there is a need to investigate the reason for this unrealistic and unpredictable return. Previous researches indemnify the anomalies that may be caused to unpredictable returns. However, market anomalies are nothing itself, it is generated by investors' behavior. In conclusion, this study examines the behavioral cause of anomalies that help the researchers to develop a behavioral model to measure the market anomalies. Hence, market anomalies are the best to examine stock market efficiency.

Data Analysis and Result

Data analysis

To test the proposed model, this study used Partial Least Square (PLS), Structural Equation Modelling (SEM), and PLS algorithm as employed in the smart PLS software. The partial least square estimation uses iterative estimation algorithms, which consists of a series of ordinary least square regression analyses (Chin, 1998). PLS considers the best technique to test our proposed model. Two steps approaches are used to interpret the results. The first is to confirm the reliability and validity of the measurement model followed by composite reliability, convergent, and discriminant validity. The second step is the measurement of the structural model (Hulland, 1999). There is no multicollinearity issue because all the constructs achieved the minimum criteria of VIF and tolerance values.

Results

Measurement Model

In PLS three phases are considered to confirm the adequacy of the measurement model. Frist is composite reliability (CR) and item loading of the constructs. Second is convergent and discriminant validity. The composite reliability estimates the degree to which a set of unobserved construct items follow in their measurement of a construct. The composite reliability of each construct achieved the minimum criteria that are 0.7. (Table 1). After confirming the reliability, the validity is examined by the convergent and the discriminant validity. Convergent validity is achieved if all the measurement items strongly correlated with its proposed theoretical constructs. Average Variance Extracted (AVE) is used to confirm the convergent validity, it shows the ratio of the summation of its constructs items variance as extracted by the construct relative to the measurement error followed to its items (Gefen & Straub, 2005). The minimum threshold of AVE is 0.5; all constructs of the study meet the minimum criteria. (Table 1). Discriminant validity examines to observe the constructs share more variance with its measure than it does share with another construct in the model (Hulland, 1999). Thus, the square root of the AVE should be greater than the

correlation with all other constructs in the model (Table 2). Tenehaus et al., (2005) introduce the global goodness fit formula to measure the model fit. That is based on R^2 value (Table: 2).

Structural Model

In the structural model to measure the significance of the hypothesized relationship, this study applied bootstrapping procedure with 500-resample (Tenehaus et al., 2005) to measure the t value of the proposed relationships (Table 3). Table 3 shows the path coefficient and significance of hypothesized relationships. Overconfidence heuristic has a positive effect on fundamental anomalies; technical anomalies and calendar anomalies. Further, availability and representativeness also have a positive effect on fundamental and technical anomalies. However, anchoring has insignificant toward technical anomalies while positively significant toward fundamental anomalies. The R^2 value shows the strength of these proposed relationships (Table 2).

Table 1. Descriptive, reliability and convergent validity of the constructs

Items	Mean	SD	Item loading	CR	AVE
Overconfidence				0.87	0.69
OC1	3.24	1.16	0.86		
OC2	3.30	1.08	0.82		
OC3	3.28	1.09	0.82		
Representativeness				0.90	0.75
RE1	3.52	1.13	0.85		
RE2	3.62	1.16	0.91		
RE3	3.63	1.05	0.83		
Anchoring				0.90	0.74
ANCHOR1	3.79	1.17	0.91		
ANCHOR2	3.49	1.11	0.83		
ANCHOR3	3.67	1.19	0.85		
Availability				0.89	0.72
AVAIL1	3.19	1.24	0.87		
AVAIL2	3.32	1.12	0.89		
AVAIL3	3.30	1.09	0.79		
Fundamental Anomalies				0.88	0.71
FA1	3.53	1.13	0.86		
FA2	3.69	1.06	0.88		
FA3	3.58	1.05	0.79		
Technical Anomalies				0.91	0.76
TA1	3.47	1.06	0.85		
TA2	3.48	1.09	0.87		
TA3	3.43	1.07	0.90		
Calendar Anomalies				0.91	0.84
CA1	3.39	1.20	0.91		
CA2	3.47	1.12	0.92		

Note: SD=Standard Deviation; CR=Composite Reliability; AVE=Average Variance Extracted

Table 2. Correlation Matrix and Discriminant Validity

	R2	1	2	3	4	5	6	7
OC		**0.83**						
RE		0.83	**0.87**					
AN		0.48	0.53	**0.86**				
AV		0.42	0.41	0.40	**0.85**			
FA	0.36	0.43	0.48	0.42	0.48	**0.84**		
TA	0.33	0.47	0.45	0.36	0.44	0.48	**0.87**	
CA	0.11	0.32	0.29	0.20	0.22	0.26	0.35	**0.91**

OC=Overconfidence, RE=Representativeness, AN=Anchoring, AV=Availability, FA=Fundamental anomalies, TA=Technical anomalies, CA=Calendar anomalies.

Table 3. Hypotheses Results

	Independent Variables	Dependent Variables	Path Coefficient	t-statistics	P-Value	Hypotheses Result
H1	OC	FA	0.15	2.10	<0.05	Supported
H2	OC	TA	0.26	4.27	<0.001	Supported
H3	OC	CA	0.32	5.60	<0.001	Supported
H4	RE	FA	0.24	3.31	<0.05	Supported
H5	RE	TA	0.22	3.06	<0.05	Supported
H6	AN	FA	0.12	1.97	<0.10	Supported
H7	AN	TA	0.03	0.44	>0.05	Not Supported
H8	AV	FA	0.27	4.24	<0.001	Supported
H9	AV	TA	0.23	4.21	<0.001	Supported

OC=Overconfidence, RE=Representativeness, AN=Anchoring, AV=Availability, FA=Fundamental Anomalies, TA=Technical Anomalies, CA=Calendar Anomalies.

Discussions and Empirical Justification

The result shows that overconfidence has a relationship with the fundamental anomalies; this is justified because of their excess trading and heavily relies on a change in stock price. This hypothesis is supported by the work of Barber and Odean (2001) that state overconfident individuals do excess trading and ignore many stocks' fundamentals. The overconfidence of investors is also significant for technical analysis. The historical trends of stock prices show both the long run and short run pattern of increase or decrease in price that helps the investors to use technical analysis in making investment decisions. This hypothesis is similar to the work of Daniel, Hirshleifer & Subrahmanyan, (1998) that narrate, technical analysis is a helpful method to predictor future return. Overconfident investors used trend analysis to predict the future return because they heavily rely on

their institution, knowledge, and skills. The overconfidence of investors has also a relation with the calendar anomalies because investors invest in the small companies in the year-end intending to get high returns in January and prevent the investor from the high taxes. This hypothesis, overconfidence toward calendar anomalies is supported by the work of Peterson & Pitz, (1988). This states that overconfidence investors think they are smarter participants in the stock market so they earn a normal return in January with tax shelter in December. Under the heuristics theory, individuals overrate their information, skills, and ability because of the illusion of control and self-attribution that make a reason to behave irrationally and deviate the market from EMH. Representativeness has a relationship with fundamental anomalies. Investor's representativeness is set by the advertisement or by reference to other investors. Therefore, Investors select the most representative stock. Investors compare the stock prices with their representative stock whatsoever their intrinsic value is. Representativeness heuristic toward fundamental anomalies relationship is strengthening with the work of Chang et al. (2009)-investors choose the high priced stock with the aim that it is worth it for the long term but unfortunately high stock price stocks are not performed for a long time. Technical anomalies have generated with representativeness, investors always expect that stock's performance consistent with the past performance. This hypothesis is supported by the work of Chen et al. (2007) Investors used historical prices and trend analysis to choose the most similar stock that defines the characteristics of desire security. Anchoring toward fundamental anomalies is positively significant by statistical tests. This depicts that investors used the latest price of the stock as an anchor and they do not consider the long-run strategic plans of stocks. Therefore, anchoring is linked with the fundamentals. This proposition is supported by the study of Mashruwala & Mashruwala (2011). Investors based on a single quantity of evidence while doing investment (Andersen, 2010). Individual's attention on growth stocks since such material grip their consideration and makes believe that popular security is valued and such behavior leaves fundamental anomalies. Anchoring is also significant toward technical anomalies. Investors consider the historical prices of stocks as an anchor and make an investment decision. Irrational investors believe that high past prices will lead to high prices in the future and vice versa. Therefore, investors rely on a single piece of information that deviates the market from EMH and generates technical anomalies. The following hypothesis is supported by the work of Chang (2011). Individual investors used the heuristics theory in terms of technical analysis; they used the previous price concerning future prediction. Availability is significant for fundamental anomalies which are consistent with the work of Dye (1985) which finds that investors always based on the information that is easily available about the stock prices. Availability has reason to leave technical anomalies. The hypothesis is supported by the findings of Kothari, Lewellen, and Warner (2006). The increase in stock prices is normal for investors but the investors overreact on the decrease in stock price. Investors try to predict the stock prices increase or decrease by using technical analysis.

Behavioral finance provides a mechanism to understand the application of investors' behavior and stock market behavior. Investors frequently use heuristics, it is considered good if it is rationally used. The stock market is a combination of buyers and sellers. Therefore, investors come with different thinking and their different behavior deviates the market from EMH. Therefore, before investing in the stock market first observe the condition of the stock market in regards to anomalies then put your decision. Behavioral finance always helps investors to make proper decisions.

Conclusion

This study examined the impact of four heuristics named overconfidence, representativeness, anchoring, and availability on the fundamental anomalies, technical anomalies, and calendar anomalies of the stock market. The main aim of this study was to measure market efficiencies through individual investors' behavior. The results show that all of the four heuristics included in this study have a significant effect on fundamental anomalies and technical anomalies. Overconfidence heuristics has significant influence on calendar anomalies. This research was based on the survey questionnaires which were collected from South Asian. The conclusion was drawn from the results shows that overconfident investors generate fundamental, technical, and calendar anomalies in the stock market. Representativeness, anchoring, and availability also generate fundamental and technical anomalies in the stock market but its tendency of generating anomalies is less than that of overconfidence. Investors should control their behavior. This study can be extended in the future by examining the other behavioral factors that may reason to generate fundamental, technical, and calendar anomalies. Other heuristics like familiarity, cognitive dissonance, and many others can be used to examine market efficiencies. Finding of this study has

significant implication for individual investors, stock market and for the field of behavioral finance. This study suggest the individual investors do not choose the stock with the aim of get an abnormal return because it is just because of heuristics. Eventually, market return will be normal by mean reversion. Stock market institutions use this research to predict the presence of anomalies and suggest a better advice to their clients. This research provide better literature in the field of behavioral finance in the context of stock market anomalies.

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