International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies

http://TuEngr.com

PAPER ID: 11A04T

DYNAMICS OF OVERCONFIDENCE AMONG STOCK MARKET INVESTORS IN PAKISTAN

Muhammad Haroon Rasheed [a*], Faid Gul [a], Muhammad Waqar Akhtar [b] and Sanaullah Tariq [c]

[a] *Department of Management Sciences, National University of Modern Languages Islamabad, PAKISTAN.*
[b] *School of Management, Universite Clermont Auvergne, Clermont-Ferrand, FRANCE.*
[c] *Department of Management Sciences, Iqra University, Islamabad, PAKISTAN.*

ARTICLEINFO

Article history:
Received 05 August 2019
Received in revised form 26 November 2019
Accepted 09 December 2019
Available online 19 December 2019

Keywords:
Behavioral finance;
Personality traits;
Behavioral factors;
Overconfidence bias;
Locus of control;
Decision-making;
Biased behavior.

ABSTRACT

In behavioral finance, the prime focus is on psychological determinants of an individual's decision making. Factors including personality traits and behavioral biases helped answering where the traditional rational paradigm of finance failed to explain, this study extend this avenue by identifying the influence of overconfidence and how its effects varies among personalities by considering the moderating impact of locus of control. The study is quantitative and data collection is done using a survey questionnaire from investors operating in Islamabad Pakistan. The results indicated that there exists significant relationship of overconfidence with investor's decisions and this relation is being significantly moderated by locus of control indicating the possibility of predictability of biased behavior from individual's personality. These findings are helpful for understanding the real life financial behavior and are significant for investors, managers and brokers in identifying and overcoming irrational exuberance and is useful for policy makers in policy making.

Disciplinary: Management & Economic Sciences (Finance).

1. INTRODUCTION

Stock market is among the cornerstones of an economy and aids economy by providing a place for sale and purchase stocks. Recent economic growth resulting from globalization and free trade environment has improved the income level of the households, resulting in increased savings and an increasing trend of investments in stock markets across the world (Pellinen et al., 2011). Stock markets act as financing source for the business organizations (Samuel, 1996), and play several functions including gving signaling mechanism for the managers by aiding them in performing decisions regarding investments and ensuring corporate governance. Stock markets are best known

*Corresponding author (M.Haroon Rasheed). Email: mhra26@gmail.com

for their role as the most effective source to raise capital for business entities (Zuravicky, 2005) and considered as a yardstick for economic growth. Hence studying and understanding the behavior of investors operating at the stock markets is currently an avenue in focus in the field of economics.

The principle of market efficiency segregates the stock markets into three types namely, weak form efficient market, semi-strong form efficient market and strong form efficient market (Fama, 1970), where first reflects all available past information making the stock completely unpredictable from past prices (Xue & Zhang, 2017). In other words, in such market the stock market returns follow random walk hypothesis and future value of stock is unpredictable (Chakraborty, 2006) but in real world market efficiency fails to hold due to market frictions such as transaction cost and limited dissemination of information (Cohen et al., 1986; Keim & Stambaugh, 1986). Conventional finance school of thought (Markowitz, 1952) is of the view that investor decisions follows the paradigm of rationality and wealth maximization in their financial decisions resulting in a unanimous behavior but in the real life investor decisions are not that simple and scientific in nature. The investors do behave irrationally and their decisions deviates them from conventional theories of finance.

To overcome these shortcomings in explaining investor's real life behavior, a new school of thought emerged as "Behavioral Finance" that helps to identify the reasons of such behavior (Slugoski et al., 1993). Behaviorists are of the view that investors in real world are not rational and are misguided during decision making by cognitive factors that includes biases, heuristics, errors, illusions and hence lack the capabilities to process the complete information available (Shefrin, 2007). According to Rapach et al. (2013) and Hong et al. (2007), frictions in information dissemation is an important factor. Behavioral factors including biases, heuristics and sentiments also play their role (Barber & Odean, 2008; DeBondt & Thaler, 1995; Kahneman & Riepe, 1998).

Overconfidence is one of these behavioral factor. The most significant and experimented factor among all the factors hence current study is to analyze the influence of overconfidence on rational choice making of investors in Pakistan (Michailova. 2010). Pakistani market is a new investment avenue created by merging the three stock markets into one in 2016. This study address investor's issues in real life to improve their decision-making abilities. This study examines impacts of locus of control as factor moderating the biasness caused in the decision-making. This study assist investors to discover the degree and nature of irrational decision caused by overconfidence and locus of control.

2. LITERATURE REVIEW

Even if the financial participants are aware of the deviations from fundamental value, the deviation still exists (Barberis and Thaler, 2003). Behavioral finance attributed this deviation to behavioral factors of which overconfidence is one of the most important factors leading to market anomalies. Overconfidence explained the existence of underpricing and overpricing of securities in the stock market. It also explained the excessive trading volume that lead to herding behavior and noise trading in stock market.

2.1 OVERCONFIDENCE BIAS

Overconfidence is a bias that leads people to believe to be better than their actual abilities (Shefrin, 2007). The overconfident investors consider themselves to have more knowledge than they actually have. Overconfidence bias is among the psychological factors and has a vital role in mental process of investors (Jaros et al., 1993). Overconfidence is a growing study field, especially in collectivist culture like Pakistan. Prior studies established that overconfidence behavior exists

significantly more in Asian cultures compared to Western culture, thus more vital to explore.

Overconfidence bias is categorized into two categories, Prediction Overconfidence which leads investors to have a very high confidence interval and Certainty Overconfidence which leads investors to have very certain judgement (Pompian, 2006). Sultana & Pardhasaradhi (2012) study these biases as crucial factors impacting the investment choices. Overconfident investors with prediction overconfidence will ignore the risk associated with their portfolio and the investors with certainty overconfidence will trade excessively and eventually that overconfidence will lead investors to have an undiversified portfolio (Awan et al., 2006). Investors due to the impact of overconfidence overestimate their ability to control the events, their understanding and undermine the vulnerability associated with their decisions (Baker & Nofsinger, 2002). The negative impact of the bias on investors is witnessed during the 1990s technological bubble in which the investors invested too much in the technological stocks due to their overconfidence that they will have super return from having concentrated stocks but at the end when the bubble burst, losses incurred (Pompian, 2006) hence it is paramount to explore the influence of overconfidence on the decision making of investors to examine its influence and its nature through empirical evidence.

2.1.1 RELATIONSHIP OF OVERCONFIDENCE WITH INVESTMENT DECISION MAKING

A general consensus exists in the literature regarding investment decisions effecting by the impact of the all the behavioral biases including overconfidence bias on it. Decision making is a process of selecting among different alternatives while keeping in mind one's goals which in investor's case is selecting among different stocks available (Miller & Byrnes, 2001). A decision can be made in many ways by using different approaches to reach at a decision. This Decision making style can be described as personal specific way of interpreting the information and response to decision making conditions (Driver, 1979). According to the popular Harren (1979) model, there are three decision making styles including rational which use all the available and relevant information and alternatives and then decide rationally, Dependent on which decisions are made based on the opinions of others and intuition in which decisions are made on the basis of feelings and emotions. Our concern in this study is only with one decision-making style namely rationality and how rational decision-making is effected by overconfidence bias. As rationality is the basic assumption of traditional financial models (Barberis & Thaler, 2003) and by rational it means investors will have optimal yield at any assumed level of risk and least risk at any agreed level of profit by considering all the available alternatives (Markowitz, 1952) and then having an optimal decision but when we observe real life behavior of Investors they do behave irrationally, various factors hinder the mental process of investors (Barber & Odean, 1999) also it is considered that sometimes investors do not have informational efficiency as assumed in conventional theories of finance (Ritter, 2003).

Overconfidence bias is "an inopportune belief toward a witnessed reasoning, judgment and the person's cognitive abilities" (Sadi et al., 2011). Market participants with this bias believe themselves to be better than others (Awan et al., 2006) hence incline to be overoptimistic in making investment choices hence leading them to trade excessively and the investors that trade excessively receives lower returns than the average (Gervais & Odean, 2001) hence having suboptimal or irrational decisions. For market trends, investors also overestimate their abilities leading them to suboptimal or even faulty forecast (Shefrin, 2002) hence causing them to behave irrationally. Overconfidence among investors is the reason why securities are not traded on fundamental or value that is calculated

*Corresponding author (M.Haroon Rasheed). Email: mhra26@gmail.com Volume 11 No.4 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A04T http://TUENGR.COM/V11/11A04T.pdf DOI: 10.14456/ITJEMAST.2020.80

using rational analysis (Scott et al., 2003). Thus this study can establish a hypothesis as

H1: Overconfidence is positively and significantly linked with irrational decision making.

2.1.2 MODERATING ROLE OF LOCUS OF CONTROL

The term locus of control was presented by Cromwell et al. (1961), but this term wasn't used in psychology until the early 1970's and it took almost another decade before its common use in other fields (Kazemi et al., 2015). It can be divided into two categories of internal and external.

The first is witnessed when an individual thinks that the anticipated outcome will befall due to his/her own and in the later type an individual thinks the result is out of his control and influenced by external factors like luck, chance, fate and powerful others (Selart, 2005). It can also be defined as the belief on the events happening to him is because of the internal factors or external factors. As expressed by the definition locus of control is associated with persons view of itself hence it impact the decision making of persons on events happening to him. The current study focused on this trait because it represents the primary or fundamental difference in behavior. In the current study we are only concerned with the impact of internal locus of control on the connection of overconfidence and investors judgement in stock markets. As investor with internal inclination will attribute the outcome to be as desired and resulting in investors' motivation towards their decisions based on his feeling and intuition instead of following the rational process of decision making. The investor's elucidation of their own personal capabilities over consequence is also influenced by the time and type of investment (Lam & Schaubroeck, 2000). According to Gervais and Odean (2001) some investors also undermine their abilities and become overly risk averse hence leading towards a more biased and irrational decisions.

The investors with inclination towards internal locus of control do not accomplish and thrive in stock market, they do not contemplate helpful information to make decision correct due to their believe about the control over the investment outcome (Boone & Witteloostuijn, 2005). Kaustia and Perttula (2012) reported that investors having internal locus of control overemphasize on their own capabilities and are of the view that they are better than average and can control or alter circumstances in the market (Allen & Evans, 2005) resulting in increased irrationality in their decisions. By deriving on the preceding arguments it can be stated that internal locus of control cause the individuals to rely more on overconfidence and hence have a potential to act as a moderator.

A moderator can modify the strength of the affiliation among the dependent and criterion, in accordance with the rules set by Baron and Kenny (1986) to test moderation, first the link between internal locus of control and investors decision making is going to be established. As moderation in investment decision making is the extent with which locus of control impacts on the relationship of overconfidence and decision making (Szilagyi et al., 1976).

H2: The relationship between Overconfidence and irrational investment decision making style is moderated by Locus of Control.

3. METHODOLOGY

The proposed framework Figure 1 is to explore effects on investment decision making style in terms of overconfidence among investors and the degree of internal locus, Firstly this study will inspect the influence of overconfidence on stock market through investor's decisions and secondly it will analyze the moderating impact of internal locus of control. shows the study framework.

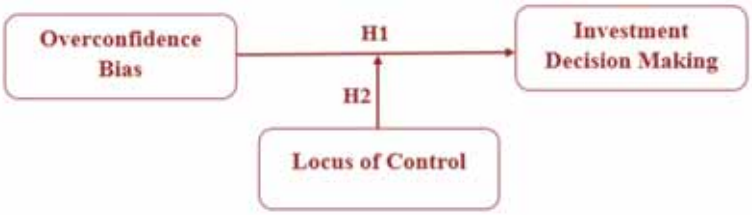

Figure 1: Study Framework

3.1 QUESTIONNAIRE DESIGN

This study is questionnaire based survey and the questionnaire used in the study consisted of four parts namely Overconfidence Bias, Internal Locus of Control, Investment Decision Making and Demographic information (i.e. Age, Marital Status, Qualification and Investment Experience). The questions were answered using five point Likert scale. Detail of the items used to measure the variables are given below;

Overconfidence Bias

The study adopted items for measuring the degree of overconfidence from the instrument of Sarwar et al. (2014). The five items relating to overconfidence were adopted to be used in our study.

Locus of Control

This study adapted items for determining the degree of internal locus of control from the inventory of Furnham (1986) and Rasheed et al. (2018).

Decision Making

The items dealing with irrational decision making were adopted from the instrument developed by Scott & Bruce (1995). Five items dealing with irrationality or intuition were used in this current study.

Table 1: Demographic Distribution

Characteristics	Frequency	Percent
Marital Status		
Single	101	51.2
Married	95	48.8
Gender		
Male	170	86.3
Female	26	13.7
Age		
18 to 25	24	12.2
26 to 33	75	38.2
34 to 41	50	25.5
42 to 50	31	15.8
50 & Above	16	8.2
Investment Experience		
00-05 Years	84	42.8
06-20 Years	86	43.9
21 Years & Above	26	13.5
Qualification		
Intermediate	7	3.5
Bachelors	85	43.4
Masters	90	46
M.Phil.	7	3.5
Others	7	3.5

3.2 SAMPLING

Primary focus is on identifying the influence of overconfidence on choice making style of investors operating at Pakistan Stock Exchange (PSX). Out of three hundred questionnaires

*Corresponding author (M.Haroon Rasheed). Email: mhra26@gmail.com Volume 11 No.4 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A04T http://TUENGR.COM/V11/11A04T.pdf DOI: 10.14456/ITJEMAST.2020.80

distributed amongst investors operating in Sargodha, Lahore and Islamabad, two hundred and thirty were returned and one hundred ninety six were considered for the final analysis. The detail of the demography is given in Table 1.

3.3 RELIABILITY AND VALIDITY TESTS

To confirm the validity, the questionnaire has been reviewed by a couple of academic experts along with an expert in English language and then it has been reviewed by a couple of brokers and investors to access that they understand either the items as it intended. Later a study is analyzed for the reliability and validity, results given in Table 2. Reliability is ascertained using Cronbach's Alpha, with values well above 0.70, thus, the instrument deemed fit for further analysis.

The instrument also exhibited criterion validity (Kerlinger and Lee, 1999) and to examine and establish the construct validity, convergent validity and discriminant validity the criteria (Campbell & Fiske, 1998), explanatory (EFA) and confirmatory factor analyses (CFA) is used.

Table 2: Reliability and Validity Results

Items	Factor Loadings	Item to total correlation	Cumulative Variance (%)	Cronbach's Alpha
O.B 1	0.899	0.813	42.6%	0.897
O.B 2	0.696	0.644		
O.B 3	0.919	0.813		
O.B 4	0.738	0.702		
O.B 5	0.916	0.782		
L.C 1	0.799	0.798	59.3%	0.915
L.C 2	0.686	0.704		
L.C 3	0.716	0.755		
L.C 4	0.724	0.640		
L.C 5	0.910	0.806		
L.C 6	0.751	0.605		
L.C 7	0.857	0.785		
L.C 8	0.799	0.684		
D.M 1	0.745	0.601	70.1%	0.904
D.M 2	0.865	0.818		
D.M 3	0.894	0.842		
D.M 4	0.857	0.774		
D.M 5	0.858	0.776		

4. ANALYSIS AND DISCUSSION

4.1 CORRELATION ANALYSIS

As can be observed in Table 3 that all variables are positively correlated. Out of which the most strongest and significant is between Locus of Control and Overconfidence bias ($r = 0.579$, $p<0.01$). Followed by the relationship between Investment Decision making and Locus of Control ($r = 0.313$, $p<0.01$) after which is the association between Overconfidence Bias and Decision Making ($r = 0.298$, $p<0.01$).

Table 3: Correlation Analysis (Significant at 0.01 (1-tailed))

Variable	O.B	LOC	D.M
Overconfidence Bias (O.B)	1		
Locus of Control (LOC)	0.579*	1	
Decision Making (D.M)	0.298*	0.313*	1

4.2 ANALYSIS OF STRUCTURAL EQUATION MODELING

Analysis of overconfidence bias's influence on the decision making is made via structural equation modeling (SEM). The findings are shown in Figure 2.

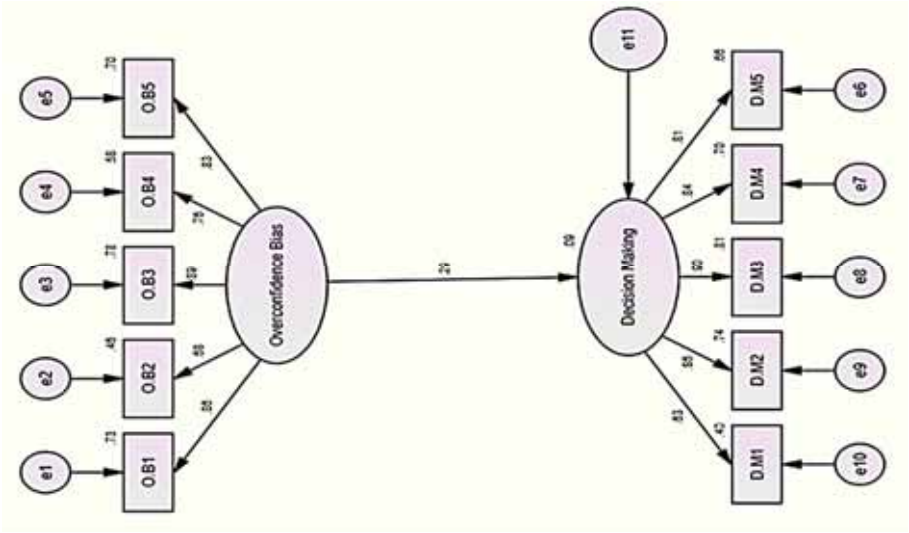

Figure 2: Structural Equation Modeling.

In the study, overconfidence is considered to be an exogenous variable and investment decision making is considered to be the endogenous variable for overconfidence bias.

Table 4 indicates that the influence of overconfidence on investors irrational decision making is particularly significant and per unit rise in the level of overconfidence is resulting in upsurge in irrationality of investors by (β=0.300, $p<0.01$).

Table 4: Structural Equation Modeling

	B	S.β	S.E	C.R	P
D.M<----O.B	0.30	0.29	0.078	3.844	<0.001

Which mean that the higher the inclination of investor to use overconfidence the more suboptimal choices will be probable, hence proving Hypothesis 1 of the study. The hypothesis is tested after establishing that each variable has a nonzero loading in his own factor and zero loading with all the others factors, there are no relationship between the error terms of the observed variables, there are no connection between the errors associated with the factors and also there is no relationship between the residual and the errors. Having satisfying all these rules, the model fit is assessed using different fitness indices, revealing that the model is statistically fit including Goodness of Fit Index (GFI) and Confirmatory Fit Index (CFI) with values 0.926 and 0.918 respectively out of the total value of 1. These values are good as above 0.90 and acceptable above 0.80, along with the value of CMIN / DF = 2.491 which is a fraction of Chi-Square (χ^2) is acceptable at value below 3.

4.3 MODERATION OF LOCUS OF CONTROL WITH OVERCONFIDENCE BIAS

The proposed moderation of internal locus of control is conducted as per the rules (Baron and Kenny, 1986). New variables (known as Interaction terms) are generated in dataset with multiplication of overconfidence and locus of control (O.B x LOC) so that the results can be interpretable. Then analysis is run in SPSS for relationship by entering dependent variable and moderator, followed by interaction were entered in a simultaneous regression model, see Table 5.

Table 5: Moderation Analysis

	Model1				Model2			
	β	S.E	T	P	β	S.E	T	P
O.B	0.180	0.085	2.122	0.035	0.395	0.404	0.975	0.349
LOC	0.215	0.083	2.541	0.012	0.428	0.450	0.952	0.342
O.B x LOC					0.159	0.064	2.318	0.021
R Square Change	0.016							0.023

*Corresponding author (M.Haroon Rasheed). Email: mhra26@gmail.com Volume 11 No.4 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A04T http://TUENGR.COM/V11/11A04T.pdf DOI: 10.14456/ITJEMAST.2020.80

The Moderation results are showing that Overconfidence (β = - 0.395, p = 0.349) and locus of control (β = 0.428, p = 0.342) both results are insignificantly linked with the investment decision making in model 2. Interaction variable of the both variable is significant (β = 0.159, p = 0.021) which is indicating the moderating relationship between overconfidence and decision making hence our 2nd hypothesis is also accepted. The moderating influence of internal locus can also be observed with the help of the Figure 3 also indicating that the higher the degree of internal locus the investor will have the higher will be the irrationality in their decision making.

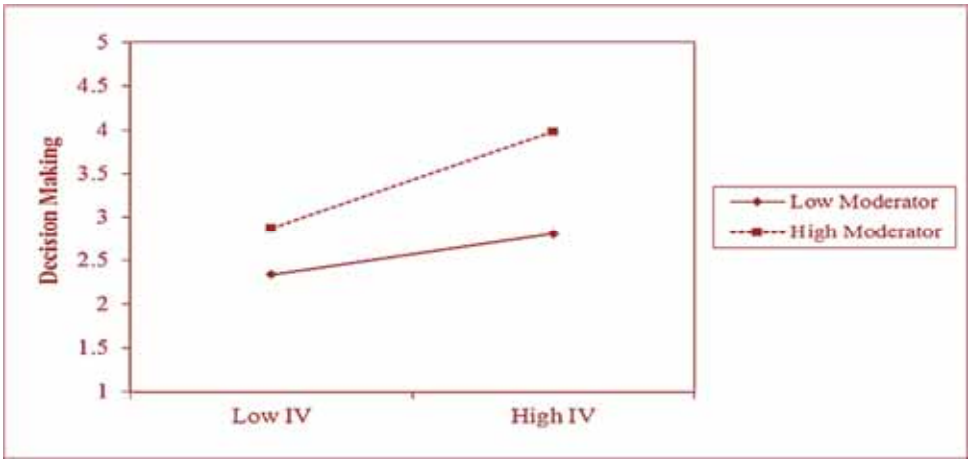

Figure 3: Moderation Analysis

5. DISCUSSION

Based on the analysis performed a number of observation can made as it can been seen that there is a progressive link between overconfidence and irrationality of the investment decisions and the effect is direct and significant. This result support over hypothesis and also are in accordance with the findings of Waweru et al. (2008), Rasheed et al. (2008), and Kudryavtsev et al. (2013) who determined that in real world investors are effected by the behavioral factors or biases and similar is the case with investors in Pakistan. Drawing form these results we can say that the Investors with overconfidence bias will have more irrational or suboptimal decisions as compared to a nonbiased investor. Also a Kudryavtsev et al. (2013) established that these biases are correlated among investors and an investor suffering from a bias is likely to using the other biases in their investment choices also, So the current findings are also important on that account also that investors in Pakistan are provoked by all the behavioral biases that causes deviation from the rational choices as explained by the conventional theories of finance. Hence this is a useful contribution to explain the reasons of deviation from standard financial theories like efficient market hypothesis, causes of herd behavior and deviation of stocks from intrinsic value.

Further in this study the moderation effect of the internal locus of control is performed which showed that there exists a significant moderating impact hence proving our proposed hypothesis 2. These result showed that the investors with higher degree of internal locus of control will lead investors to higher irrationality in their decision making will result in causing deviation from the standard or rational behavior. These findings are also of vital significance as according to Lin & Ding (2003) locus of control will moderates a relationship only if the relationship under analysis is personality specific and as Kudryavtsev et al. (2013) found out that all the biases are correlated among investors hence it can be established that all the biases or cognitive factors are personality specific and this finding can help to identify the investors that will be more prone towards these behavioral factors and will aid in establishing a comprehensive framework grounded on the theories

of behavioral economics for determining the financial behavior in real life.

6. CONCLUSION

This study is conducted to inspect the theories of behavioral finance. The intention of the article is to examine the influence of overconfidence bias on investor's decision and also to examine the impact of internal locus of control as a moderator with overconfidence bias to increase irrationality amongst investors operating at Pakistan Stock Exchange (PSX). This study finds out using empirical investigation through structural equation modeling that overconfidence bias have a substantial influence on investment choices. Hence becoming a key factor for explanation of irrational behavior of stockholders in real world. Also it is established that degree of locus of control impact this relation causing investors to be more irrational towards their decision making. The investors buy stocks for just because they think they are better than others and trade excessively instead of undertaking the complete analysis which lead their portfolios to be suboptimal. That can lead to bad performance of the market sometimes, especially when some people trick the investors by spreading fake information to bend the trend of the stock market in their own personal benefits.

7. AVAILABILITY OF DATA AND MATERIAL

Data can be made available by contacting the corresponding author.

8. REFERENCES

Allen, W. D., & Evans, D. A. (2005). Bidding and overconfidence in experimental financial markets. *The Journal of Behavioral Finance*, *6*(3), 108–120.

Awan, H. M., Bukhari, K., & Ghufran, B. (2006). Understanding investment behavior of individual investors: How they handle investment decisions. *Do They Act Rationally*.

Baker, H. K., & Nofsinger, J. R. (2002). Psychological biases of investors. *Financial Services Review*, *11*(2), 97–116.

Barber, B. M., & Odean, T. (1999). The courage of misguided convictions. *Financial Analysts Journal*, *55*(6), 41–55.

Barber, B. M., & Odean, T. (2008). All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors. *Review of Financial Studies*, *21*(2), 785–818.

Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. *Handbook of the Economics of Finance*, *1*, 1053–1128.

Boone, C., & Van Witteloostuijn, A. (2005). Team locus-of-control composition, leadership structure, information acquisition, and financial performance: A business simulation study. *Academy of Management Journal*, *48*(5), 889–909.

Campbell, D., & Fiske, D. (1998). Convergent and discriminant validation by the multitrait-multimethods matrix'. *Personality*, *56*, 162.

Cromwell, R. L., Rosenthal, D., Shakow, D., & Zahn, T. P. (1961). Reaction time, locus of control, choice behavior, and descriptions of parental behavior in schizophrenic and normal subjects. *Journal of Personality*, *29*(4), 363–379.

DeBondt, W. F. M., & Thaler, R. (1995). Financial Decision Making in Markets and Firm Finance. *Series of Handbooks in Operational Research and Management Science*, *9*.

*Corresponding author (M.Haroon Rasheed). Email: mhra26@gmail.com

Volume 11 No.4 ISSN 2228-9860 eISSN 1906-9642 CODEN: ITJEA8 Paper ID:11A04T http://TUENGR.COM/V11/11A04T.pdf DOI: 10.14456/ITJEMAST.2020.80

Driver, M. J. (1979). Individual decision making and creativity. *Organizational Behavior*, 59–91.

Furnham, A. (1986). Economic locus of control. *Human Relations*, *39*(1), 29–43.

Gervais, S., & Odean, T. (2001). Learning to be overconfident. *Review of Financial Studies*, *14*(1), 1–27.

Gul, F., & Akhtar, N. (2016). Predictors of Investor Overconfidence in Karachi Stock Exchange. *Journal of Managerial Sciences*, *10*(2), 301–315.

Harren, V. A. (1979). A model of career decision making for college students. *Journal of Vocational Behavior*, *14*(2), 119–133.

Hong, H., Torous, W., & Valkanov, R. (2007). Do industries lead stock markets? *Journal of Financial Economics*, *83*(2), 367–396.

Jaros, S. J., Jermier, J. M., Koehler, J. W., & Sincich, T. (1993). Effects of continuance, affective, and moral commitment on the withdrawal process: An evaluation of eight structural equation models. *Academy of Management Journal*, *36*(5), 951–995.

Kahneman, D., & Riepe, M. W. (1998). Aspects of investor psychology. *The Journal of Portfolio Management*, *24*(4), 52–65.

Kaustia, M., & Perttula, M. (2012). Overconfidence and debiasing in the financial industry. *Review of Behavioural Finance*, *4*(1), 46–62.

Kazemi, Z., B. Ansarirad, & A.H. Asl. (2015). The effect of control locus on process of individual Investors Decision-making (Tehran Stock Exchange). *Advances in Environmental Biology*, *2*(9), 1024–1029.

Kerlinger, F. N., & Lee, H. B. (1999). *Foundations of behavioral research*. Retrieved from http://www.citeulike.org/group/328/article/404473

Kudryavtsev, A., Cohen, G., & Hon-Snir, S. (2013). "Rational'or'Intuitive": Are Behavioral Biases Correlated Across Stock Market Investors? *Contemporary Economics*, *7*(2), 31–53.

Lam, S. S., & Schaubroeck, J. (2000). The role of locus of control in reactions to being promoted and to being passed over: A quasi experiment. *Academy of Management Journal*, *43*(1), 66–78.

Lin, C.-P., & Ding, C. G. (2003). Modeling information ethics: The joint moderating role of locus of control and job insecurity. *Journal of Business Ethics*, *48*(4), 335–346.

Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, *7*(1), 77–91.

Michailova, J. (2010). Development of the overconfidence measurement instrument for the economic experiment. *Munich Personal RePEc Archive*, *34475*(2), 1–44.

Miller, D. C., & Byrnes, J. P. (2001). Adolescents' decision making in social situations: A self-regulation perspective. *Journal of Applied Developmental Psychology*, *22*(3), 237–256.

Pompian, M. M. (2006). Behavioral finance and wealth management. *How to Build Optimal Portfolios That Account for Investor Biases, New Jersey*. Retrieved from http://down.cenet.org.cn/upfile/10/2007121471954151.pdf

Rapach, D. E., Strauss, J. K., & Zhou, G. (2013). International stock return predictability: What is the role of the United States? *The Journal of Finance*, *68*(4), 1633–1662.

Rasheed, M. H., Rafique, A., Zahid, T., & Akhtar, M. W. (2018). Factors influencing investor's decision making in Pakistan: Moderating the role of locus of control. *Review of Behavioral Finance*, *10*(1), 70–87. DOI: 10.1108/RBF-05-2016-0028

Ritter, J. R. (2003). Behavioral finance. *Pacific-Basin Finance Journal*, *11*(4), 429–437.

Sadi, R., Asl, H. G., Rostami, M. R., Gholipour, A., & Gholipour, F. (2011). Behavioral finance: The explanation of investors' personality and perceptual biases effects on financial decisions. *International Journal of Economics and Finance*, *3*(5), 234–241.

Sarwar, A., Mansoor, Z., & Butt, N. S. (2014). Investor's Behavior in Pakistan Mercantile Exchange (PMEX). *Science International*, *26*(3), 1371–1377.

Scott, J., Stumpp, M., & Xu, P. (2003). Overconfidence bias in international stock prices. *The Journal of Portfolio Management*, *29*(2), 80–89.

Scott, S. G., & Bruce, R. A. (1995). Decision-making style: The development and assessment of a new measure. *Educational and Psychological Measurement*, *55*(5), 818–831.

Selart, M. (2005). Understanding the role of locus of control in consultative decision-making: A case study. *Management Decision*, *43*(3), 397–412.

Shefrin, H. (2002). *Beyond greed and fear: Understanding behavioral finance and the psychology of investing*.

Shefrin, H. (2007). *Behavioral corporate finance: Decisions that create value*.

Slugoski, B. R., Shields, H. A., & Dawson, K. A. (1993). Relation of conditional reasoning to heuristic processing. *Personality and Social Psychology Bulletin*, *19*(2), 158–166.

Sultana, S. T., & Pardhasaradhi, S. (2012). An empirical analysis of factors influencing Indian individual equity investors' decision making and behavior. *European Journal of Business and Management*, *4*(18), 50–61.

Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: A survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets*, *1*(1), 24–41.

Muhammad Haroon Rasheed is a PhD Research Scholar at Department of Management sciences at National University of Modern Languages, Islamabad and studying under HEC Pakistan Indigenous Scholarship Program. He received his M.S degree in Finance from COMSATS University Islamabad. His current interests involve applications of Behavioral Theories in the Field of Finance.

Dr. Faid Gul is Head of Department Management Sciences, National University of Modern Languages Islamabad, Pakistan. His research interests include Behavioral Finance, Capital Markets, Corporate Finance and Corporate Governance.

Muhammad Waqar Akhtar is a PhD Scholar at School of Management, Universite Clermont Auvergne, Clermont-Ferrand, France. He is pursuing his PhD under HEC Pakistan Overseas Scholarship Program. His Interest involve Understanding of Financial Behavior from the Prospect of Behavioral Finance.

Sanaullah Tariq is a PhD Research Scholar at Department of Management sciences, IQRA University Islamabad under HEC Pakistan Indigenous Scholarship Program. He received his M.S degree in Finance from COMSATS University Islamabad. His current interests involve Stock Market Behavior.