

Personality Antecedents Of Investors' Biased Behavior In Pakistan

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Abstract:- The purpose of the current study is to identify the personality traits that make an investor prone to make biased and suboptimal decisions; deriving from prospect and trait theory, we empirically validated the proposed theoretical model. The results are constructed based on a questionnaire survey conducted by collecting data from (n=198) investors in Islamabad, Pakistan. The results revealed that the personality traits of agreeableness, extraversion, and openness are significantly causing biased behavior in investors in Pakistan. Our empirical work, by identifying different personality traits associated with biased behavior, can help identify and aid in overcoming biased decision-making in stock markets. This aspect is rarely exposed, and this study is the pioneer to focus on the heuristic biases, hence providing vital insight to the investors, policymakers, and professionals to consider the personality before investing, to make optimal decision making, which will also ensure the efficiency of the stock market in the long run.

Keywords:- Behavioral Finance, Personality Traits, Decision making, Biases, Heuristic, Stock market.

1 Introduction

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 [1] and Pakistan is one among the emerging economies with improving overall outlook, along with efficient and effective stock market [2]. As reported by Bloomberg, In 2016 Pakistan stock market was the best accomplishment marketplace in Asia and stood fifth among highest yielding markets worldwide. Another significant accomplishment is to reclaim its developing market position by M.S.C.I. Pakistan [3] hence Pakistan is an excellent avenue to invest for investors. After the financial crisis, investors are considering for emerging markets like Pakistan that are less affected by economic stagnation of China and fluctuations in U.S policy rate. Therefore it is of utmost importance to examine and explore the investment activities in the context of the stock market in Pakistan. Financial decisions—Investment or financing are made to maximize the value for the stakeholder(s) but are these decisions are optimal in the real world is a central topic of discussion in the study of investors' decision making. According to conventional finance theories, a financial decision is perfectly rational and wealth maximizing, but investors' decision-making is often irrational [4]. To get a better picture of investors' real-life behavior, behavioral finance merged theories from the field of psychology and finance to identify the reasons causing deviances from the customary financial theory. Behavioral researchers argue that a person's psyche impacts financial decision-making [5]. According to Kahneman and Tversky's [6] prospect theory, these psychological factors are causing investors' irrational behavior. These psychological factors are numerous and include biases, heuristics, and illusions, etc. [7] Heuristics biases are the rule of thumbs or mental shortcuts that help decide without doing

the complex probabilities assessment and leads an individual toward suboptimal decisions [8]. These heuristics are critical and are caused by their use of mental shortcuts [9]. Contrary to the other factors, these have emerged through experience and knowledge; the higher the experience and expertise will be, the higher the reliance on such biases [10]. Investors' mindset rejects rational analysis; instead, they rely on these heuristics leading to suboptimal decision making [11]. In this study, the aim is on explore the most utilized heuristics in decision making, namely availability and representativeness heuristic [8], [12].

This study will explore personality traits that cause an individual to rely on heuristics to make investment decisions, which previous studies failed to focus on. To identify the factors driving such biased behavior, a model is proposed by drawing on the disposition approach of personality because every person has a different situation and desires and differs in personality traits [13]. According to the disposition approach, personality traits of a person shape their behavioral outcomes, and financial behavior will also be impacted by personality traits [14]. There is a substantial link amongst personality of an investor and behavioral biases in previous studies [15]. Earlier studies mainly focused on the impact of personality traits directly on their investment decisions [13] and their intentions. It was suggested by Simon, Houghton, & Aquino [16] that other factors and settings should be tested that can directly or indirectly affect investors' decision making. There are minimal studies in the existing literature that explored personality traits leading to biased behavior and none in the heuristics biases. Hence, this work aims to theoretically and empirically explore the personality factors leading to investors' representative and availability behavior in Pakistan.

2 LITERATURE REVIEW

Conventional finance theories like the efficient market hypothesis (E.M.H.), the capital asset pricing model (CAPM) state that each individual is rational. Their financial choices are made with the intention of wealth maximization, which includes investment decision-making [4], which is not the case in the real-world. Hence, standard finance is based on how an investor should behave rather than behave in the real-world [5]. When we observe the decision-making in everyday life, there exist substantial deviances from these theories. Hence to understand the real-life financial behavior, it is essential to consider some models that consider participants irrational [17]. Researchers tried to explain real-life financial behavior in

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behavioral finance by merging theories from psychology and finance [5]. Investors are considered to be affected by their psychology and bound to fall to framing effects in their decisions and risk assessment [18]. Behavioral finance identified various reasons influencing an investor's rationality while investing, which includes cognitive and emotional factors [16]. Among the most significant contributions in behavioral finance is the prospect theory [5]. The financial theory used the utility concept to explain that the individuals are utility maximizer in their decisions but the results reported in prospect theory shows that in the real world, gain and losses are evaluated differently by investors and rather than making decisions on actual gains or actual losses, final judgements are grounded on the superficial gains or superficial losses [19]. The experimental proof concluded that individually disobey the traditional utility-maximizing approach instead of the vital feature an individual decides is loss aversion [20]. This theory further expanded the avenue of research for identifying the factors that are causing such deviations from optimal decisions. In this study, we focused on two of the utmost relied upon heuristics in decision-making, namely representativeness and availability [8].

2.1 Availability Bias

Availability bias in which decision-makers rely upon the easily retrievable knowledge than to examine all relevant information, including other alternatives and procedures, resulting in irrational decisions [25]. Availability bias manifests itself in stakeholders when they favor to invest locally in establishments with which stakeholders are more acquainted [26] and the data about them can be easily obtained. Impact on the people-oriented organizational report can impact decision-makers in the capital market which are also predisposed by these heuristic [27]. Investors also alter or change their investment preferences and choices by considering their capital cost [28]. Another consequence of availability heuristic is that it leads investors to a wrong inference that a stock with good returns will have low risk. A stock perceived as bad will have high risk and low return [29], leading toward irrational decisions.

2.2 Representativeness Bias

The degree of familiarity can be interpreted as Representativeness [21]. [22], [23] this heuristic impacts the stock market and can be detected when an investor is eager to simplify his investment decisions based on only particular characteristics. This heuristic originates because individuals practice cognitive shortcuts and rule of thumb to make an investment decision by just considering few aspects, which includes the management type, historical gains, and attractiveness, etc. but this pattern identification by investors can be inaccurate due to neglecting all the other relevant information and hence resulting in having biased decisions, as such as people put weight only on the recent experience [24]. Representativeness can lead investors towards inference of the company's long-term growth rate from recent increases [25]. This heuristic can also cause an overreaction in the market by leading investors to focus only on "hot" stock and ignore all other stocks, especially the poorly performing ones [21].

2.3 Personality Traits and Biased behavior

Psychological factors are vital determinants in explaining financial behavior. One of these psychological factors is an individual's personality, which plays a significant role in determining how an investor responds to market information [30]. Trait Theory can be traced back to Allport [31], also named dispositions. Researchers dealing with trait theories are interested in the measurement of traits that influence a person's behavior. According to these theories, every individual has some innate preferences according to which their actions are determined [32]. There are different approaches to study human personality. The most widely used social sciences model for measuring an individual's character is the big five personality traits by Costa and McCrae [33], enabling characterization of individuals based on five factors [34]. In this study, the relationship of heuristic biases with personality traits will be analyzed by utilizing the big five personality model. Dimensions of the model include Agreeableness, Extraversion, Conscientiousness, Openness, and Neuroticism [35]. In the earlier studies, personality traits have been found to have a significant impact on financial behavior [5]. Pompian and Longo [36], in their research, find out that the personality traits of an individual are linked with biased behavior in financial decision making. They suggested that investors should consider the type of personality to develop investment strategies that result in minimizing the effect of these biases. Literature indicates that different personality types are linked differently with risk [14]. Lin [15] concluded that personality traits are correlated with investors' biased behavior. The difference in personality traits causes differences in financial behavior, leading to variance in economic decision-making instead of a similar and rational one. Therefore leading to the inference that based on one's personality traits, one can determine the type of biases the investor will fall prey to. Sadi et al. [30] also concluded that four out of five personality traits except for agreeableness are linked to biased behavior. Still, none of the prior studies was focused on heuristics instead focused on biases as general. Heuristic behavior is very much different and particularly important to study because contrary to the other biases, heuristics utilize information and is based on prior experience or knowledge, and as we have already discussed that personality traits of agreeableness, extrovert and openness indicate how much a person prefers his intuition instead of complete analysis and also interacts with the society and get influenced by the external and often irrelevant information hence it is proposed that,

H1: *The personality trait of Extroversion is significantly linked with Availability bias.*

H2: *Personality trait of Openness are significantly linked with Availability bias.*

H3: *The personality trait of agreeableness is significantly linked with Availability bias.*

H4: *The personality trait of Extroversion is significantly linked with Representative bias.*

H5: *The personality trait of Openness is significantly linked with Representative bias.*

H6: The personality trait of agreeableness is significantly linked with Representative bias.

3 METHODOLOGY

Research design is the basis, following which research proceeds for data collection and analysis [37]. The study in focus follows an objectivist approach regarding ontological assumption, which asserts that social reality is external and independent of the researcher's mind [38]. Whereas this study follows the positivism approach in its epistemological assumption, the positivism approach originated from natural science. It is the use of natural science's methods in studying social sciences [38]. Simultaneously, the research's cross-sectional design is most appropriate in the given circumstances for this particular study [39].

3.1 Questionnaire Design

The questionnaire consists of adopted measures of identifying concerned variables. In this part, a 5 points Likert scale is used, which is the most widely used scale, and respondents are asked on a scale of 1 to 5. A detail of the items used in the instrument is given below.

Personality Traits. This measure for measuring personality traits is adopted from Mayfield, Perdue, and Wooten [40].

Availability Heuristics. This measure consists of five items adopted from the instrument of Rasheed et al. [12].

Representative Heuristics. This measure consists of Six items for measuring representativeness bias, which is also adopted from the instrument of Rasheed et al. [12].

3.2 Sampling

This study collected data from investors in Pakistan, particularly from Islamabad Pakistan, using a convenience sampling technique that is most appropriate for the current study, as it can give you the maximum response rate. It also avoids wastage of limited time and resources available [38] and is also one of the most convenient ways of getting some initial information from respondents [41]. The reason for choosing Pakistan's federal capital for data collection is its diversity and representativeness. People from all around Pakistan are settled here. The questionnaires were distributed among the stockholders. Out of three hundred questionnaires distributed, two hundred and twenty-six were returned. Out of these questionnaires, one hundred ninety-eight were utilized for the empirical analysis residual were castoff due to missing values.

3.3 Reliability and Validity

The instrument was adapted from different sources. However, it is already tested in a similar context in various studies. However, still to ensure its validity, according to the current study's context, it has been reviewed by three academic experts and two investors of the stock market. After that, we proceeded with a pilot study to establish the instrument's reliability and validity by collecting data from 32 investors before proceeding with the survey. Using data from the pilot study, reliability has been established using Cronbach's alpha (α) and Composite reliability (C.R).

Table 1: Reliability, Discriminant, and Criterion-related validity

Variables	C.R	A	AVE	E	A	O	A.B	R.B
Extraversion (E)	0.902	0.861	0.83	1				
Agreeableness (A)	0.911	0.875	0.85	0.75	1			
Openness (O)	0.922	0.895	0.84	0.44	0.42	1		
Availability Bias (A.B)	0.875	0.826	0.76	0.47	0.34	0.29	1	
Representative Bias (R.B)	0.915	0.888	0.80	0.42	0.58	0.31	0.63	1

According to Nunnally, Bernstein, and Berge [43], an alpha value of 0.70 or above indicate good reliability of the instrument similarly according to Bagozzi & Yi [44], a value of 0.70 or above of composite reliability score indicate good reliability, which in our case are all above 0.80 indicating high reliability of the instrument. The validity of the instrument has been established on the following four dimensions.

Criterion-related validity:

Criterion-related validity is established if the predictor variables are significantly correlated with the criterion variables [45]. All the variables ($p < 0.10$) correlated significantly, thus providing significant criterion-related validity for further process.

Discriminant Validity

According to Fornell and Larcker [46], this validity is established if the average variance extracted (AVE) for each construct is higher than the square of its correlation among the variables, the highest correlation in this study is between extraversion (A) and agreeableness (A) 0.75 the square of which is 0.56, which is much lower than the lowest average variance extracted (AVE) which is 0.76 of availability bias (A.B)

establishing the discriminant validity of the instrument. AVE value of 0.50 or above also indicates good validity [45]. Apart from that, discriminant validity is also validated by using Campbell and Fiske [47] by comparing an item's correlation with the items of the same factor and items of other factors. In 50 percent or above comparisons, the correlation between the construct should be higher.

Unidimensionality

Unidimensionality is the degree to which questions are linked towards the variable they are measuring [48]. Unidimensionality of an instrument is affirmed by using confirmatory factor analysis (C.F.A.) and comparative fit indices (CFI), the value of which is preferred to be above 0.90 but can be accepted at 0.85 [49], and the minimum value in our case is 0.897 which is almost 0.90. According to Ketikidis et al. [50], unidimensionality can also be established if the factor loadings in confirmatory factor analysis are significant, which are all significant ($p < 0.001$).

Convergent Validity

Convergent validity is accessed using exploratory and confirmatory factor analysis. All the indicators are loaded onto the respective constructs during exploratory factor analysis (E.F.A.). Based on the Eigenvalue criteria of above 1 [51], the value of all of the factor loadings is also above 0.70. According to Bagozzi, Yi, and Phillips [52], if the factors loadings are significantly linked with their underlying construct in confirmatory factor (C.F.A.) analysis, convergent validity is established, which in our case are all highly significant.

In conclusion, overall, the instrument is valid and indicates good psychometric properties.

Since the data was collected from a single individual investor, the common method variance may present a problem. According to Harman [53], common variance exists, the factor analysis will result in a single factor, which was not the case in our pilot study. Another problem is nonresponse bias which is checked by comparing data from the pilot study and later survey through a t-test. There wasn't any significant difference found among the mean responses of both groups. Hence data was free of standard method and nonresponsive bias.

Table 2: Unidimensionality and Convergent validity

Variable	CFI	Items	P.C.F.L	S.C
Extraversion	0.89	E1	0.875	0.763*
		E2	0.850	0.743*
		E3	0.836	0.847*
		E4	0.777	0.680*
Agreeableness	0.91	A1	0.915	0.951*
		A2	0.839	0.806*
		A3	0.830	0.665*
		A4	0.805	0.764*
Openness	1	O1	0.915	0.694*
		O2	0.888	0.701*
		O3	0.811	0.903*
		O4	0.794	0.948*
		O5	0.780	0.747*
Availability Bias	1	A.B1	0.840	0.714*
		A.B2	0.767	0.679*
		A.B3	0.753	0.622*
		A.B4	0.735	0.662*
		A.B5	0.726	0.810*
Representativeness Bias	0.99	R.B1	0.871	0.737*
		R.B2	0.841	0.883*
		R.B3	0.807	0.816*
		R.B4	0.806	0.761*
		R.B5	0.768	0.737*
		R.B6	0.720	0.609*

P.C.F.L= Principal Component Factor Loading, S.C=Standardized Coefficients
 *=Significant at p<0.001

EMPIRICAL FINDINGS

Out of the total 198 respondents of the complete survey, 169 were male, and 29 were female, with most investors belonging to the age group of 30 to 40 with experience ranging from 5 to 20 years We used A.M.O.S. to test the proposed hypothesis using structural equation modeling (S.E.M.). The S.E.M. is a technique for testing structural models by incorporating both latent and observed variables [54]. The model showed overall a good fit indicated by different fitness indices, which include the goodness of fit index (G.F.I.) = 0.91 and comparative fit

index (CFI) = 0.89 out of the total value of 1 for the indices, and the value are preferred to be as close to 1 as they can be. These values are considered a good value above 0.90 and acceptable above 0.80 [55]; along with these, the value of the ratio of chi-square and freedom CMIN/DF=1.81 is preferred to be below two and is also acceptable at a value below 3. The value of the root mean square of error of approximation (R.M.S.E.A.) value is also below 0.5; hence all the criteria fulfill the prerequisites of a statistically fit model.

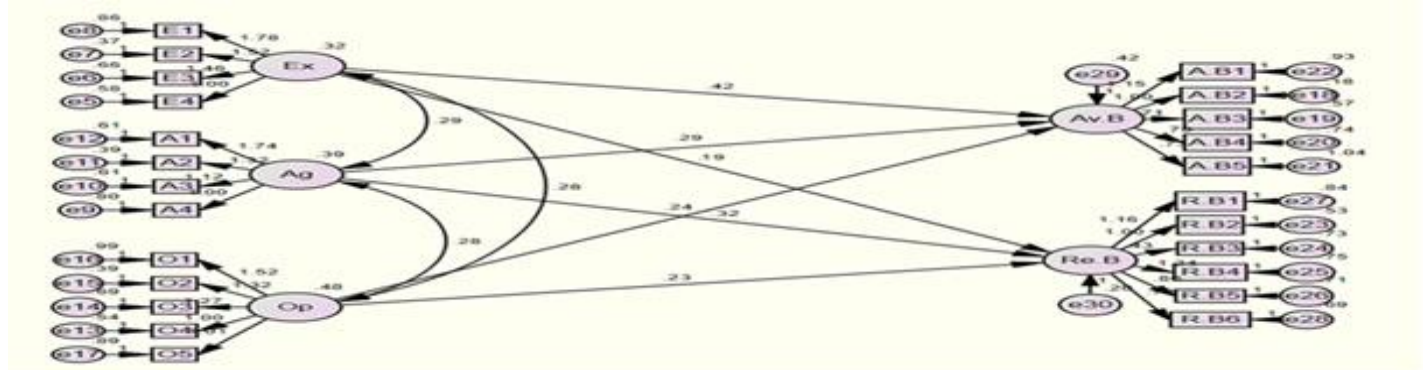


Figure 1 Hypothesis Testing

4.1 Impact of Personality Traits on Availability Bias:

As it can be shown in table 4 that all the personality traits are significantly and positively linked with the Availability bias (A.B) at ($p < 0.05$). Extraversion (E) is significantly causing biased behavior. One unit increased in degree of extraversion in a person leads to ($\beta = 0.420$, $p < 0.01$) degree increase in availability bias similar is the case with the Agreeableness (A) and Openness (O) which is also increasing the degree of biased behavior by each unit increase in these personality traits by ($\beta = 0.292$, $p < 0.05$) and ($\beta = 0.199$, $p < 0.05$).

4.2 Impact of Personality Traits on Representative Bias

As it can be observed in the table that all the personality traits are significantly and positively linked with the Representative bias (R.B) at ($p < 0.05$) also. Extraversion (E) is significantly causing biased behavior. One unit increased in degree of extraversion in a person leads to ($\beta = 0.230$, $p < 0.05$) degree increase in representative bias similar is the case with the Agreeableness (A) and Openness (O) which is also increasing the degree of biased behavior by each unit increase in these personality traits by ($\beta = 0.384$, $p < 0.01$) and ($\beta = 0.238$, $p < 0.01$).

Table 3: Hypothesis Results

			Estimate	Standardized Estimates	S.E.	C.R.	P
Availability Bias	<---	Extraversion	0.420	0.389	0.112	3.737	0.000
Availability Bias	<---	Agreeableness	0.292	0.224	0.115	2.549	0.012
Availability Bias	<---	Openness	0.199	0.203	0.094	2.122	0.036
Representativeness Bias	<---	Extraversion	0.230	0.237	0.101	2.290	0.024
Representativeness Bias	<---	Agreeableness	0.384	0.327	0.103	3.743	0.000
Representativeness Bias	<---	Openness	0.238	0.270	0.084	2.835	0.005

5 CONCLUSION

This study focuses on how personality traits are linked with the investors' biased behavior in the Pakistan stock market, so we theoretically explored many factors that cause investors to behave irrationally. Exploring literature hinted that heuristic biases are most commonly used in investment decision as stated by Tversky and Kahneman [8] hence this study extended the current literature by linking the personality traits with heuristic biases and concluded empirically that the personality traits of extraversion, openness, and agreeableness lead towards the use of heuristics by an investor. The higher these personality traits are, the higher the investor's degree of biased behavior. These results are in line with the prior studies of Bashir et al. [14] and Nandan and Saurabh [13] who concluded that personality trait has an impact on the investment behavior, but our study is unique in a sense that it focused on the heuristics biases that are caused by experience and knowledge and contrary to other psychological factors that are inborn tendencies toward errors and affect all individuals equally. These heuristics biases have a more significant impact on experienced and knowledgeable investors [25]. Based on the findings, investors can be identified that will be more prone towards the use of heuristics, and by keeping that in mind their shortcomings and having proper knowledge, an investor can make their financial decisions optimal by stop relying on heuristic shortcuts and instead focusing on complete available information. These results are useful for both academics and professionals. This study makes investor's behavior predictable based on their personality traits. This is a fact now that investors are prone to these psychological factors, which leads to market crashes and anomalies. The current research will also help the policy makers try to devise policies for investor's protection and smooth functioning of the stock market by keeping in view these antecedents of irrational behavior.

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