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DO BEHAVIORAL BIASES IMPACT INVESTMENT DECISIONS? STOCK MARKET INVESTOR'S-BASED VIEW

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A B S T R A C T

This paper aims to clarify the mechanism by which behavioral biases, namely, anchoring and adjustment (ANC), overconfidence (OVC), risk aversion (RA), herding (HD), representativeness (RPS), and disposition (DIS) impact on investment decisions of individual investors, actively trading on the Pakistan Stock Exchange (PSX). Investors' heuristic biases have been measured using a questionnaire containing numerous items, including behavioral biases and investment decision-making indicators, on a 5-point Likert scale using the convenience sampling technique. The sample consists of 270 individual investors. For testing the relationship between behavioral biases and investment decisions, hypotheses have been tested by using regression analysis. The Pearson correlation and Cronbach's alpha tests have been used to examine the validity and reliability. The results of this study suggest that RPS and RA had a positive but insignificant effect on investment decision-making. In contrast, OVC, HERD, and ANC had positive and statistically significant results. Furthermore, DIS had a negative and insignificant impact. Most research focuses on well-established financial markets, with limited knowledge about less developed areas. Hence, this study aims to contribute to filling this gap in the literature. It provides awareness and understanding of heuristic biases in investment management, which could be very useful for decision-makers and professionals in financial institutions.

A R T I C L E I N F O

Keywords:
Behavioral finance, heuristic biases, investment decision-making, individual investors

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1. INTRODUCTION

Financial markets are driven mainly by investment. Individual and institutional investors have a significant impact on financial market fluctuations. Every aspect that impacts an individual's investing choice is worth exploring. According to researchers, one of these powerful aspects is the behavioral combination of investors (Alquraan, Alqisie, & Al Shorafa, 2016). As a result, investors' actions influence their investments (Quaicoe &

Eleke-Aboagye, 2021).

The rule of rationality concept was challenged by behavior finance researchers (Fama, 1998). According to conventional finance experts (Markowitz, 1952), individual investors are sensible risk managers and prefer moderate risks to significant hazards for a particular profit level (Arora & Kumari, 2015). When making investment decisions, investors use a variety of classical finance strategies and concepts to assess hazards and forecast returns (M. Ahmad & Shah, 2020). According to (M. Ahmad & Shah, 2020; Mushinada & Veluri, 2019), the central concept of conventional finance is an efficient market (Fama, 1970). According to efficient market theory, all information is available, and markets become efficient. Even if some individuals make blunders because of biases as a result of the inconsistencies in traditional finance, behavioral finance has emerged.

Traditional finance is being replaced by behavioral finance which established theories cannot explain anomalies (Cornicello, 2004). Behavioral finance is concerned with the illogical decisions made by the individual. According to behavioral finance theory, market investors do not behave rationally every time (Özen & Ersoy, 2019). The goal of behavioral finance is to comprehend how mental errors and emotions affect the actions of individual investors (Jain, Walia, & Gupta, 2019). The mind uses biases as psychological devices to make sense of information overload and develop judgments because these biases affect how a decision-maker acts (Sahi & Arora, 2012). According to (Adil, Singh, & Ansari, 2021; Pompian, 2012), behavioral biases tend to describe investors making bad investment decisions due to mental decline. Bias is a consistent deviation from the norm or a preference for a specific conclusion (Shefrin, 2002). Cognitive limits, information processing techniques and heuristics (mental shortcuts) can all cause biases.

Previous studies have identified behavioral biases, and their effects on individual investors have been examined. This in-depth study on behavioral biases in individual investors' financial choices covered all aspects. As far as we know, there has never been a systematic literature review of behavioral biases that looked at multiple biases in a single research. According to the latest research, there has been little behavioral finance study done in Pakistan (M. Ahmad & Shah, 2020). In a growing nation such as Pakistan, it is crucial to find that cognitive factors affect the selection choices of investors. This work closes a gap in the body of knowledge by looking at how investor behavioral biases impact investment decision-making, specifically in Pakistan.

In this article, we've looked at six significant biases that might influence investors' decisions: Overconfidence, disposition effect, herding bias, anchoring bias, representativeness bias, and risk aversion. The study is significant for stock exchange participants and investors since it permits investors to see how their mental and emotional processes impact their decision-making ability. People may extract appropriate steps to promote better sensible selection choices if they have been informed of the cognitive elements contributing to illogical decisions. Consequently, the market will eventually become efficient.

Therefore, the primary objectives of this research are to • systematically synthesize the literature on behavioral finance; • identify the study gaps and possible future directions for studies in this field; • ascertain the causative factors of such biases and their impacts on investor's decision-making; • determine the role of these biases in the decision-making process of investors.

The rest of the article is organized as follows. The literature review on behavioral biases and the decision-making process is explained in Section 2 of this article. The research approach chosen for the study is introduced in Section 3 by the authors. The analysis and the study are summarized in Section 4 by the researchers. Section 5 summarizes and concludes the study.

2. LITERATURE REVIEW

The theoretical foundations of behavioral biases are presented in this section, as their influence on investing decision-making.

Behavioral biases and investment decision-making:

Behavioral Finance considers how physiological factors affect the decisions that investors are made. Literature shows psychological biases influence investors' decisions and indicates that behavioral biases such as overconfidence, risk aversion, loss aversion, anchoring, and underestimating investment risk are all examples of behavioral anomalies used by decision-makers (Yamini, 2020). Many ideas have been proposed to explain this behavioral trend, but the most widely recognized one, "prospect theory," implies psychological influences on

investors' decision-making (List, 2004; Mushinada & Veluri, 2019). In human psychology, there are various biases (Adil et al., 2021; Grohmann & Menkhoff, 2015). On the other hand, researchers argue that people's psychological traits significantly impact their financial decisions. Age, gender, and educational attainment are a few factors that might influence these choices (Özen & Ersoy, 2019). Some emotional elements (afraid, anxiousness, distress, jealousy, exhilaration, hunger, satisfaction, desire, and pride) also affect financial investment decisions (Birău, 2012). Everyone has psychological biases, according to researchers in behavioral finance, which prevent individuals from making the right decisions and could result in negative investment returns and unsatisfactory investor profitability (M. Ahmad & Shah, 2020; Bashir, Azam, Butt, Javed, & Tanvir, 2013; De Bondt, Mayoral, & Vallelado, 2013).

- Representativeness

Classifying ideas, events, and reasoning based on prior occurrences is known as representativeness bias (Kishor, 2020). The representativeness heuristic influences stock market participants' investing decisions (Khan, Afeef, Jan, & Ihsan, 2021). Another study also concluded that behavioral biases as representativeness bias, have a considerable influence on the selection process of investors (Jain, Walia, Kaur, & Singh, 2021). Studies included representative heuristics in behavioral finance to describe individuals' under- and overreactions in the capital market. The study indicates that the performance of investments is significantly impacted by representativeness bias. (Gavrilakis & Floros, 2021).

- Anchoring and adjustment bias

Humans tend to rely too much of their financial decisions on a single source of information, such as media, exceptional share prices, remarkable one-day results, or historical prices. This tendency is known as anchoring. This initial information is the anchor (Gavrilakis & Floros, 2021). The study discovered that anchoring significantly influenced investment decision-making (Jain et al., 2019; Kristensen & Gärlinga, 1997). According to research, anchoring and adjustment bias influence different sorts of decisions (Shah, Ahmad, & Mahmood, 2018).

- Overconfidence bias

Overconfident individuals believe they are highly skilled, so they think they understand more than they do while making decisions is known as overconfident bias (Z. Ahmad, Ibrahim, & Tuyon, 2017). Investors are said to be overconfident in their talents, expertise, and hopes for the future (Mushinada & Veluri, 2019). It is determined that overconfidence significantly influences how investors make decisions (Adil et al., 2021; Budiarto & Susanti, 2017). Overconfidence bias significantly impacts investor behavior selection choices (Jain et al., 2021).

- Risk aversion

Risk-averse persons have been proven to invest less in securities, whereas those with a greater risk acceptance might purchase more risky equities and increase their profits (Kasoga, 2021). The study concluded that risk aversion significantly influences individuals' decision-making (Sarkar & Sahu, 2018). The research examined how their risk aversion affected individual investment choices in the Kenyan capital market (Sarkar & Sahu, 2018). Individual investors are risk avoiders (Roth & Voskort, 2014; Tversky & Kahneman, 1974).

- Herding bias

Herding is a cognitive bias in which individuals make judgments relying on the decisions of others, usually a bigger group. Herding bias is characterized as an investor's conduct that follows the decisions of others (Durand, Newby, Tant, & Trepongkaruna, 2013; Jain et al., 2021; Prosad, Kapoor, & Sengupta, 2015). According to many researchers, herding bias significantly influences investors' decisions (Adil et al., 2021; Jain et al., 2021). According to research, herding substantially impacts investors' decisions (Mittal, 2019). In addition, the study discovered indications of market herding toward the market portfolio (Gavrilakis & Floros, 2021).

- Disposition bias

Investors often prefer to realize profits over losses, referred to as the "disposition effect" (Kahneman & Tversky, 1979). The prospect hypothesis indicates that after experiencing gains, individuals become less risk-taking, and after suffering losses, they become more risk-seekers. Investors are also influenced by the disposition effect while making financial decisions (Adil et al., 2021; Toma, 2015). The disposition effect is said to have a significant and positive impact on long-term investor's selection choices (Mittal, 2019)

3. HYPOTHESIS DEVELOPMENT

H1: The overconfidence bias has a significant effect on the investment decision-making of investors.

H2: The herding bias has a significant effect on the investment decision-making of investors.

H3: The disposition bias has a significant effect on the investment decision-making of investors.

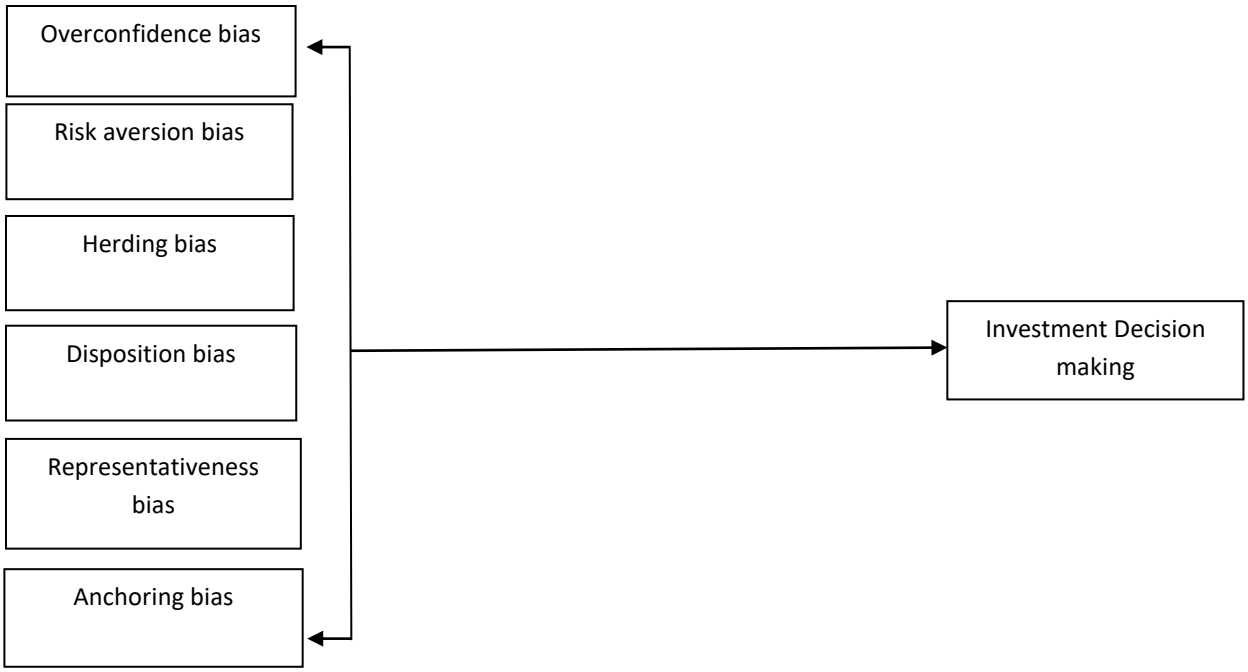
H4: The risk aversion bias has a significant effect on the investment decision-making of investors.

H5: The representativeness bias has a significant effect on the investment decision-making of investors.

H6: The anchoring bias has a significant effect on the investment decision-making of investors.

4. RESEARCH FRAMEWORK

Figure 1



5. RESEARCH METHODOLOGY

In this study, primary data has been used. Using the convenience sampling technique, a systematic questionnaire was used to gather information from 270 stock market investors in Pakistan. The study used a cross-sectional research approach. Using SPSS, the validity and reliability have been examined using the Pearson correlation and Cronbach's alpha tests, respectively. In the study, the hypothesis has been evaluated using hierarchical regression analysis. The research questionnaire included thirty-four items for measuring behavioral biases (RST, ANC, OVC, RA, DIS, and HERD) and their impact on investors' decision-making. Part A and Part B are the two sections of the questionnaire. Section A of the questionnaire asks responders to fill out a demographic profile, which includes questions about their age, gender, education, and investment experience. Responders are required to find connections to the fictitious financial market condition in Section B, which is scenario-based. A 5-point Likert scale is used in behavioral bias inquiries, with one denoting "strongly agree" and five representing "strongly disagree." Behavioral biases (OVC, RA, HERD, and DIS) and investment decision-making were measured using data from (Adil et al., 2021), while the two other variables (RST and ANC) measurements have been taken from this study (Jain et al., 2019).

6. RESULTS AND DISCUSSION

Reliability analysis

Research suggests that for consistency, instruments need to have a reliability value of between 0.5 and 0.8 (Adil et al., 2021; Pedhazur, 1982). According to the Cronbach's alpha test, the behavioral biases score in this study is reliable, with anchoring bias at 0.733, overconfidence bias at 0.735, disposition bias at 0.670, herding bias at 0.708, risk aversion at 0.737, representativeness bias at 0.746, and investment decision at 0.744. The current study's findings are compatible with those (Adil et al., 2021; Baker, Kumar, Goyal, & Gaur, 2019; Rasool & Ullah, 2020). Table 1 displays the overall results of the reliability and validity test.

Table 1. The findings of the reliability test are:

Variables	Cronbach Alpha reliability test	No of item
Anchoring Bias	.733	4
Overconfidence bias	.735	5
Disposition bias	.670	5
Herding bias	.708	5
Risk Aversion	.737	5
Representativeness	.746	5
Investment Decision	.744	5

The results show that the variables demonstrate a greater degree of internal consistency. These indices imply that the measurements in the variables are reliable and can be used in further investigation.

Demographics:

In light of demographic findings, respondents gathered 261 complete responses. Male responses comprised 210 of the 261 respondents, while female responses included 51, or 80.5% of the total and 19.5% of the total, respectively. 20.5 percent of the respondents were found to be between the ages of 18 and 24, 44.8 percent were

found to be between the ages of 25 and 35, and the remaining respondents were found to be between the ages of 36 and 45 (27.6 percent), with only 6.9 percent of respondents over the age of 45. Regarding educational background, 50.2 percent of the 131 respondents had postgraduate degrees. And among the remaining responses, it was discovered that the majority had graduated 89 (34.1 percent). Following that, 23 replies (8.8%) were undergraduates, and only 18 were doctoral respondents (6.9 percent). According to descriptive statistics, 86 individual investors (or 33.0 percent) had four to five years of investment experience, 74 (28.4 percent) had more than five years of experience, 75 (28.7 percent) had an experience of less than a year, and only 26 (10 percent) had an experience of between one and three years. The primary data regarding the respondents' demographic profiles are shown in Table 2.

Table 2. Statistics for demographics variables:

Variables	Unit of measure	Frequency	Percent %	Valid Percent %	Cumulative Percent %
Gender	Female	51	19.5	19.5	19.5
	Male	210	80.5	80.5	100.0
	Total	261	100.0	100.0	
Age	18-24	54	20.7	20.7	20.7
	25-35	117	44.8	44.8	65.5
	36-45	72	27.6	27.6	93.1
	45 & above	18	6.9	6.9	100.0
	Total	261	100.0	100.0	
Education qualification	Doctorate	18	6.9	6.9	6.9
	Graduate	89	34.1	34.1	41.0
	Postgraduate	131	50.2	50.2	91.2
	Undergraduate	23	8.8	8.8	100.0
	Total	261	100.0	100.0	
Investment experience	0-1	75	28.7	28.7	28.7
	1-3	26	10.0	10.0	38.7
	4-5	86	33.0	33.0	71.6
	5 & above	74	28.4	28.4	100.0
	Total	261	100.0	100.0	

Correlation analysis

To ascertain the relationship between the research variables, the correlation was performed using SPSS. Results show that all variables have a perfect correlation because the correlation coefficient is less than or equal to 0.80. According to (Adil et al., 2021), Multicollinearity is not a problem if the correlation's absolute values are substantially lower than 0.80. In the previously mentioned table 3, the study's correlation data are presented. The correlation coefficient is one (r = 1), indicating that each variable is connected to itself according to the results. The outcomes are consistent with those (Shah et al., 2018). According to the results of the correlation analysis, anchoring bias has a positive Pearson correlation (r = 0.298) with investment decision-making, indicating that anchoring bias is related to investment decision-making. Results reveal that overconfidence bias has a positive correlation with disposition bias (Pearson coefficient: 0.020), herding bias (Pearson coefficient: 0.192), risk aversion (Pearson coefficient: 0.319), and representativeness (Pearson coefficient: 0.273), indicating that as overconfidence bias increases, disposition bias, representativeness bias, anchoring and adjustment bias, and herding bias also increase. The outcome is the following (Adil et al., 2021; Shah et al., 2018). This suggests that overconfidence in psychology also increases representativeness, availability, anchoring, and adaptability (Shah et al., 2018).

Table 3. Pearson correlation Analysis:

		Mean	SD	Anchoring Bias	Overconfidence	Disposition	Herding	Risk Aversion	Representativeness	Investment Decision	Financial Literacy
Anchoring Bias	Pearson Correlation	9.8046	3.91105	1							
Overconfidence	Pearson Correlation	10.6782	4.43629	-.125*	1						
Disposition	Pearson Correlation	11.2146	4.11376	.245**	.020	1					
Herding	Pearson Correlation	10.8621	4.08234	.216**	.192**	.278**	1				
Risk Aversion	Pearson Correlation	10.7510	4.65701	.070	.319**	.283**	.251**	1			
Representativeness	Pearson Correlation	11.1264	4.53653	.140*	.273**	.270**	.202**	.392**	1		
0Investment Decision	Pearson Correlation	10.9655	4.62214	.298**	.180**	.100	.338**	.200**	.196**	1	

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Regression analysis

Table 4. Regression Analysis:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.879	1.189		2.421	.016
	AnchoringBias	.313	.071	.265	4.434	.000
	Overconfidence	.131	.064	.125	2.028	.044
	Disposition	-.085	.070	-.076	-1.219	.224
	Herding	.278	.069	.246	4.031	.000
	RiskAversion	.074	.064	.075	1.160	.247
	Representativeness	.068	.065	.066	1.048	.296

a. Dependent Variable: InvestmentDecision

As shown in Table 4, we conducted a regression analysis to look at the statements of the hypotheses, with behavioral biases functioning as the primary predictor. Behavioral biases such as anchoring bias, overconfidence, disposition, herding, risk aversion, and representativeness were input, along with changes in R2 and reported beta. The R2 change value is 0.205, P = 0.000, indicating a 20.5 percent change in investor decision-making behavior caused by overconfidence, anchoring, disposition, risk aversion, representativeness, and herding, demonstrating a statistically significant association between individual investor's behavioral biases and decision-making. The model is fit and statistically significant, according to the F statistic value (F=10.925, sig 0.000). Findings also show that the dependent variable's investment decision-making is statistically significantly impacted by behavioral biases such as anchoring (Beta = 0.265, P-value 0.05), overconfidence (Beta = 0.125, P-value 0.05), and herding (Beta = 0.246, P-value 0.05). Additionally, risk aversion is statistically insignificant to dependent variables (Beta = 0.075, P-value > 0.05), representativeness bias is also statistically insignificant (Beta = 0.066, P-value > 0.05), and disposition bias is negatively insignificant as (Beta = -0.076, P-value > 0.05). This study's findings align with the most recent research (Adil et al., 2021), which shows that behavioral biases like overconfidence and herding significantly impact investing decision-making, while disposition bias is determined to have an insignificant impact. The study was also supported by (M. Ahmad, 2021). It is said that behavioral biases impacted investors in Malaysia. Regression analysis findings show that this study supports the hypothesis (H1, H2, and H6) but contradicts the others (H3, H4, and H5).

The results showed behavioral biases impacted investment decisions (Sattar, Toseef, & Sattar, 2020). The findings of the present investigation are consistent with those (M. Ahmad, 2021; Baker et al., 2019; Kartini & NAHDA, 2021). It is argued that behavioral biases, including representativeness bias, loss aversion bias, anchoring bias, herding bias, and overconfidence bias, statistically significantly influence investor decision-making and provide evidence that investors do not always act rationally. The Current study results align with those (Kasoga, 2021; Özen & Ersoy, 2019; Trönnberg & Hemlin, 2019), revealing that behavioral biases statistically influence how people make investing decisions. This study is also similar to those (Hon-Snir, Kudryavtsev, & Cohen, 2012; Jain et al., 2019; Roth & Voskort, 2014; Shah et al., 2018), and (Gavrilakis & Floros, 2021) which demonstrate that particular behavioral biases have a considerable impact on investor decisions. The author discovered that behavioral biases substantially affect investment choices (Mushinada & Veluri, 2019; Singh & Gupta, 2015).

7. CONCLUSION AND RECOMMENDATIONS

Behavioral finance aims to discover the psychological and emotional impacts of investing decisions. In this study, we empirically examined how behavioral biases (anchoring bias, risk aversion bias, herding bias, representativeness bias, overconfidence bias, and disposition bias) impact the investing choices of investors. The findings reveal that biases (RA, DIS, and RST) are statistically insignificant, indicating that behavioral factors influence individual investors' decision-making when investors choose investment securities. We established a positive and significant association between behavioral biases (OVC, HERD, and ANC) and investment decision-making. Findings conclude that individuals don't always make logical choices since several behavioral and psychological biases can affect their judgment. Understanding these behavioral finance theories is essential for investors to prevent them from making illogical choices. The researchers suggest that rather than relying solely on cognitive heuristics and sentiments, investors should carefully examine capital prospects, develop mathematical business requirements, set investment criteria and limits, and base judgments on their financial capacity and expertise. The study recommends that future research find the relationship between other behavioral biases (home bias, framing bias) that are not covered in this research with large samples and different populations.

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