
Investor Irrationality in Emerging Economies: Empirical Evidence of Behavioral Biases from Pakistan's Stock Market

Hasnain Manzoor^{1*}, Allah Ditta Nawaz¹, Ghulam Mustafa Shaikh²

¹ Assistant Professor, Department of Management Sciences, SZABIST University Larkana, Sindh, Pakistan. ***Corresponding Author:** Email: hasnain.manzoor@lrk.szabist.edu.pk

² Assistant Professor and Chairman, Department of Management and Administrative Sciences, The University of Larkano, Sindh, Pakistan. Email: gmsaikh@uolrk.edu.pk

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Abstract

Traditional finance is primarily based on the Efficient Market Hypothesis (EMH), which assumes that investors behave rationally and make investment decisions based on all available information. However, growing evidence from behavioral finance suggests that investors are often influenced by psychological, cognitive and emotional biases that deviate from rational decision-making. This study examines the impact of four key psychological biases, including belief bias, conservatism bias, regret aversion and loss aversion, on investors' decision-making. Using a quantitative research approach, primary data were collected from 100 individual investors through a structured questionnaire. The data were analyzed using appropriate statistical techniques to evaluate the relationships between the identified psychological biases and investment decision-making. The findings reveal that beliefs, conservatism bias, regret aversion and loss aversion significantly influence investors' decision-making behavior. These results challenge the assumptions of the Efficient Market Hypothesis by demonstrating that investment decisions are not solely driven by rational analysis but are also shaped by psychological factors. The study reinforces the growing body of behavioral finance literature by providing empirical evidence of the importance of behavioral biases in financial decision-making. The findings suggest that financial institutions, investment advisors and regulatory authorities should incorporate behavioral finance principles into investor education and financial literacy programs. Awareness of psychological biases can help investors recognize irrational decision-making patterns and improve investment outcomes. Investors should adopt disciplined investment strategies, seek professional financial advice and rely on objective financial analysis to minimize the influence of psychological biases. Future research should consider larger and more diverse samples, additional behavioral biases and comparative analyses across different demographic groups and financial markets.

Keywords: Behavioral Finance, Investor Decision-Making, Psychological Biases, Beliefs, Conservatism Bias, Regret Aversion, Loss Aversion, Efficient Market Hypothesis, Regression Analysis, Pakistan Stock Market

Introduction

The Black Monday - Stock Market Crash of October 1987, the Wall Street Crash of 1929, the Dot-com bubble of the 1990s and the recent financial distress in October 2008 are a few of those economic events in the financial world that have not only caused a vivid movement in stock prices

but have also questioned the justifications and significance proposed by neoclassical finance models (Paudel & Laux, 2010). According to economic and finance theories, markets are assumed to be stable, the stock price movements are likely to be in compliance with economic trends; investors are believed to be rational and are supposed to consider all available information in the investment decision-making process (Chin, 2012). However, erratic swings in investor sentiment during the economic crisis in both debt and equity markets have highlighted the need for timely incorporation of human sentiment functions into existing finance models. As a result, researchers developed key behavioral finance theories based on experimental psychology literature, whose ultimate purpose was to supplement existing finance models, explain investor behavior and better forecast asset returns in the market (Paudel & Laux, 2010).

Owing to current financial market trends, psychologists argue that even the shrewdest investors are influenced by psychological biases, a concept often dismissed as extraneous by standard finance theories (Chin, 2012). So, contrary to the economic principle which presumes investors as rational human beings having the potential to seek information without any bias and to integrate that information to design an investment strategy that is likely to yield better investment performance, the behavioral finance theories attributed mental factors rather than the fundamental variables as an important determinant of stock prices. Thus, though the rationality hypothesis is deemed to be capable of capturing and anticipating the stock price movements (Chin, 2012), a paradigm shift is being observed by contemporary finance theories as the increasingly volatile and deviating nature of the market could no longer be elucidated by the rationality hypothesis (Nunes, 2025).

Critiques of standard finance theories, in turn, led to the incorporation of human psychology and behavior into financial theories. Dating back to the studies conducted by the proponents of standard finance theories, it was found that the essence of any model aimed at understanding investment behaviors lies in the assumptions about investor preferences or about how they analyze risky gambles. Demonstrating this concept, Von Neumann and Morgenstern in 1944 came up with the concept of the expected utility framework, which shows that if the investors' preferences or their evaluation of risky gambles satisfy a number of plausible axioms completeness, transitivity, continuity and independence - they can be symbolized by the expectation of a utility function (Barberis & Thaler, 2002). Though that framework was centered on developing an understanding of how people respond when the outcomes of gambles have known objective probabilities, the practical applicability of this approach was questionable.

The handling of this situation subsequently led to the emergence of the Rational Expectations Equilibrium Framework (REE), which was believed to incorporate two major assumptions about the investors' rationality. First, the agents were assumed to adjust their beliefs in accordance with the new information as described by the Bayes' law and second, given their beliefs, the agents were supposed to make such investment decisions that are normatively appropriate in the sense that they exhibit a consistent pattern with the Savage's notion of Subjective Expected Utility (SEU) if the true probabilities can be estimated subjectively (Savage, 1964). Stated otherwise, the agents were not only assumed to be rational but also believed to reflect consistent beliefs (Sargent, 1993); thus, requiring them to not only correctly process the new information but also possess sufficient information about the structure of the economy, which is practically not possible (Tian & Tang, 2025).

Contradicting the notion of market efficiency and attempting to provide an explanation for the way psychological biases influence investors' behavior, behavioral finance theories acknowledge the impact of numerous psychological biases, either cognitive or emotional in nature, on the deterioration of an investor's decision-making and their economic outcomes (Raghunathan & Corfman, 2006). Cognitive biases are defined as human tendencies to commit systematic errors in specific circumstances based on cognitive factors. Such biases are thought to be an outcome of

information processing and are affiliated with human psychology (Nadurak, 2026). Numerous pieces of evidence reveal that investors exposed to cognitive biases usually misinterpret information and are likely to overreact or underreact to new market information. To support the impact of psychological biases on investor behavior, prospect theory, developed by Kahneman and Tversky (1979), provides an explanation for the disposition effect, which is one of the various behavioral biases (Chin, 2012).

According to prospect theory, investors opt for probabilistic alternatives that involve risk, where the probabilities of outcomes are known. The theory states that investors base their decisions on the potential value of gains and losses rather than the final outcome and that they evaluate those gains and losses using certain heuristics. This change in investor's risk perception may cause disposition effect as the investors tend to become more risk-averse when facing gains while demonstrating an increased inclination towards more risks when faced with losses (Kaustia, 2010), ultimately resulting in investors' tendency to sell profitable stocks immediately in order to earn superior returns while holding on the losing investments or even increase the amount of investments in the losing stocks (Bloomfield, 2008). Thus, behavioral finance being an intellectual model involves studying the financial markets using the compound models of sociological, psychological, financial and other related sciences which is against the basic assumptions of neoclassical finance theories i.e. the economic agents are rational while in reality the investors do not behave rationally either because of their preferences or because of the result of their perceptual errors. Stating otherwise, irrational factors like emotion, culture, religion and ideology are a few of those elements that not only play an important role in influencing investors' behavior under various circumstances but also dictate investors' behavior and its impact on the financial markets (Tsoukis et al., 2025).

The central theme of this research is to examine the impact of various psychological biases on investors' investment decisions in a real-world setting, as opposed to the rational/optimal behavior proposed by normative financial theories. Since the companies operating in stock market propose a variety of products to the individual investors that not only facilitate them to enhance their chances of finding investments best suitable for their needs but also make the choices more tricky and less straightforward, the investments may sometimes results in significant gains for the investors due to which they may set a belief of investing in that particular security, stick to their belief and show reluctance towards investing in others or they may sometimes suffer from greater losses when the market starts heading into a downturn so a special emphasis is being laid on examining the impact of following four psychological factors i.e. beliefs, conservatism , regret and loss aversion bias which are likely to affect the investors' decisions (Chin, 2012).

The purpose of this study is to investigate the impact of various psychological biases on investors' investment decisions and to contribute to the existing literature on the grey areas in standard finance models. Special emphasis is laid on beliefs, conservatism, regret and loss aversion biases, highlighting their impact on investors' decision-making. Although many studies in this area have been conducted in developed countries, studies of this genre are often limited in developing economies like Pakistan. Also, because cultural, religious and ideological differences exist between Eastern and non-Western countries, studies in this area are likely to contribute to understanding the relationship between psychological biases and investor behavior in the Karachi Stock Market of Pakistan.

The subsequent section of this study presents the literature review of the various psychological biases and analyzes their impact on investors' behavior towards the market in terms of their investment decisions. This is followed by the research methodology and the study's results. Finally, the study presents the conclusions along with the implications of the results and suggestions for future research.

Literature Review

The functional mechanism of financial markets has long been governed by the efficient capital market hypothesis, which is considered the heart of neoclassical finance theory. This hypothesis was first promulgated by Eugene F. Fama in 1970 which defines an efficient market as the one that incorporates firms (making production-investment decisions) and investors (making investment decisions in securities that represent the ownership of firms' activities) with the assumptions that the behavior of agents tends to be "rational" when involved in buying and selling of securities and given all publicly available information, the pricing of assets is an absolute reflection of their intrinsic values. This implies that investors usually invest in high-return stocks and the pricing of a company's stock is a manifestation of information available on the firm's earnings and its business prospects (Paudel & Laux, 2010).

This traditional framework of investors' rationality may appear to be appealingly simple and would be very satisfying if the predictions conform to the data, but unfortunately, after years of diligent and deliberate efforts, it has been found that even the elementary concepts about the aggregate stock market and individual trading behavior could not be easily understood within this framework (Barberis & Thaler, 2002). This could be justified by the views of early proponents of traditional theories who approach investors as being highly rational in their investment decisions (Chin, 2012); however, investors are only human and their actions are likely to be guided by market sentiments or even may be followed by their own gut feelings when making financial decisions. Thus, though standard finance theory strongly holds the law of one price and market efficiency, recent shifts in economic trends have brought into question the reliability of assumptions made by the efficient market hypothesis.

Since the rationality hypothesis could no longer elucidate the increasing volatility and the fluctuating nature of the market (Nunes, 2025), the difficulties faced by the traditional paradigm i.e. the deviation of investors' decisions from the standard presuppositions (Bolhuis, 2005), in turn, gave rise to a new approach to the financial markets which was termed as Behavioral finance (Chin, 2012). This approach diverges from the Rational Expectations Equilibrium Framework (Malmendier & Tate, 2005) in that investors' choices are rational but limited due to their limited knowledge and perception capacity, a concept commonly known as bounded rationality (Barberis & Thaler, 2002; Sadi et al., 2011).

Behavioral Finance broadly challenges the assumptions of standard finance theories and holds that agents are neither completely rational in all their investment decisions nor do they update their beliefs correctly (Barberis & Thaler, 2002). They may rely on simpler judgmental operations in decision-making and fall prey to various cognitive errors believed to originate in an increased inclination of the human mind toward making mental shortcuts and avoiding longer, analytical processing (Chen et al., 2007). These heuristic simplifications may even be much stronger in developing economies where the investors are less familiar, knowledgeable and educated about the investment processes. Thus, the individual investors who use heuristics are prone to various biases which ultimately lead to various anomalies in the marketplace (Lovric, Kaymak & Spronk, 2008; Rehman et al., 2025).

A growing body of psychological evidence has also necessitated the study of behavioral theories to better understand investors' behavior, as their decision-making process could be highly influenced by undeniable psychological, cognitive and emotional biases (Paudel & Laux, 2010; Chin, 2012). Cognitive psychologists believe that investors' beliefs, the way they make investment decisions and their preferences set the basis for the development of various cognitive and emotional biases (Lovric, Kaymak & Spronk, 2008). Thus, human psychology is one of the most important ingredients of the behavioral finance which holds that the investors beliefs and their perceptual and cognitive prejudgments not only impede their decision making process (Rizzi, 2008) but are also likely to create mental errors in their judgments under special

conditions; thereby leading to wrong expectations and wrong assessment of the stock which finally results in irrational decisions (Fuller; 1998).

Behavioral finance research does not recommend that economists abandon the assumption of investors' intelligence and purposiveness in their decision-making; rather, it aims to explore the reasons for investors' deviations from perfect rationality that lead to biases (Wu, 2009). For instance, conservatism bias is believed to have a significant impact on investors' investment decisions, as individuals are reluctant to modify their beliefs once their mindset has been framed in a particular context (Shefrin, 1948). To demonstrate this, Lord, Ross and Lepper (1979) argued that once people have formed a belief or a judgment, they tend to adhere to and stick to it for too long, which ultimately either makes them reluctant to explore evidence that challenges their beliefs or makes them find new evidence but treat it with excessive skepticism (Barberis, Shleifer & Vishny, 1998). Supportive evidence to this systematic error in the investors' decision making was provided by a study conducted in Taiwan which holds that the investors suffering from conservatism bias are likely to underreact to earnings announcement (Chen, Chin & Liu, 2009) i.e. if a company unexpectedly declares good earnings, conservatism means that the investors respond inappropriately to the new information, creating a little upward trend in the prices. Thus, conservatism proposes that the investors lay due emphasis on their prior beliefs rather than on the latest piece of earnings news, i.e., when good piece of earnings news is declared by the organization, the investors act in accordance with the mean reversion theory as if part of the shock will be reversed in the next period (Barberis & Thaler, 2002).

Recent advances in behavioral decision theory have not only contradicted the notion of a utility function but have also provided a framework that tries to explain investor behavior when confronted with choices under uncertainty (Fiegenbaum & Thomas, 1988). The theoretical foundations for such investor behavior are embedded in prospect theory, which was proposed by Kahneman and Tversky (1979). Emphasizing the importance of reference or target levels in the analysis of risky choices, this theory hypothesizes that the majority of investors reveal a combination of predominant modes of behavior, i.e., risk-seeking and risk-averse behavior that are intimately connected with the notion of a target return. If returns appear to be below the target levels, individuals tend to be risk-seeking; however, for returns above target, a vast majority of investors are likely to be risk-averse (Kahneman & Tversky, 1979). As part of this theory, an important bias, i.e., loss aversion bias, was identified by Daniel Kahneman and Amos Tversky, which states that people are generally more inclined to avoid losses than to acquire gains. This bias causes investors to hold their losing investments and to sell their winning ones, ultimately leading to a concept known as the disposition effect, which refers to the desire to hold onto the losing investments for too long (risk-seeking behavior) and to sell winning investments too readily (risk-avoidance behavior) (Pompian, 2006). A different dimension of loss aversion bias was studied by Embray and Fox (1997), incorporating the role of gender in making investment choices under uncertainty. The results suggest that females and males exhibit different attitudes toward risk in financial decision-making; i.e., females are more prone to risk-averse behavior, whereas males were found to be more willing to assume average or above-average risk. Additionally, females are assumed to be more nervous, more cautious and less confident in their investment decisions compared to males, ultimately resulting in higher portfolio turnover than male investors (Ricciardi, 2008).

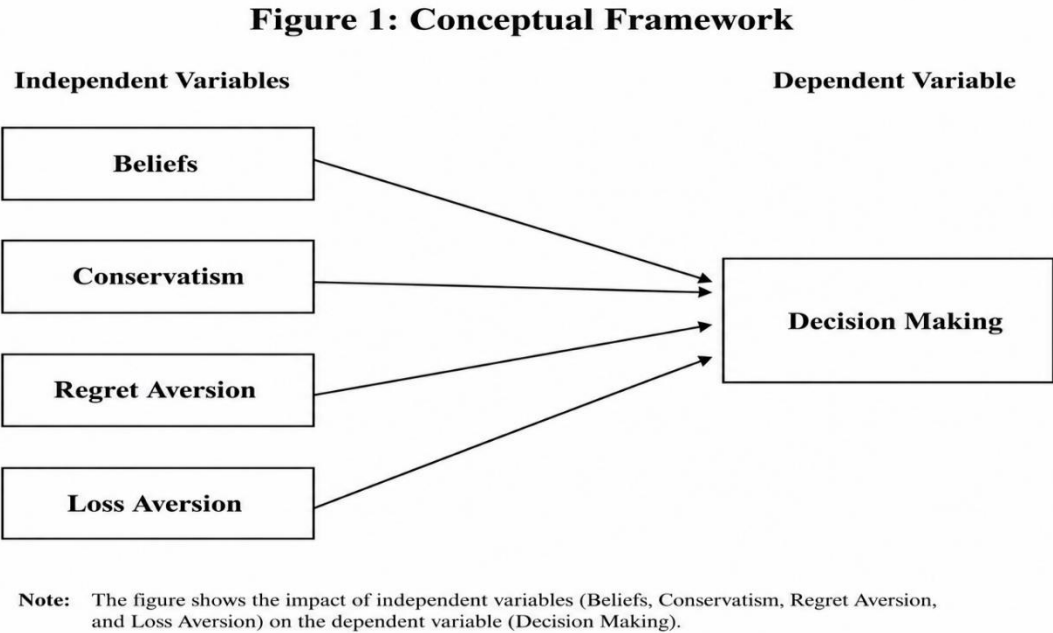
Though loss-averse investors may be increasingly inclined to hold poorly performing stocks, excessive holding of poor stocks may cause investors to experience regret when their investments exhibit lower performance compared with alternative investments that would produce a better outcome (Michenaud & Solnik, 2008). Regret is defined as an emotional state that arises when an event develops a feeling that a different past decision would have provided better outcomes in the future than the one selected (Shefrin, 2009). These bad decisions made in the past and the bad

experiences may serve as guidance for the investors in order to avoid regrettable consequences in the future (Samuelson & Zeckhauser, 1988; Chin, 2012), but sometimes these bad experiences may lead to conservatism, retrenchment and licking of wounds rather than pressing on and snapping up the undervalued stocks (Pompian, 2006). Extending the notion of regret aversion for losses, broadly proposed the concept of regret theory and the feeling of pride, which suggests that the quest for pride and the avoidance of regret may lead to a disposition to realize gains more readily and defer losses (Muermann & Volkman 2007). Thus, investors regret when they sell winner stocks too early or hold on to losers for too long (Shefrin, 2009).

To conclude, the existing literature on the role of cognitive errors in investment decision-making has predominantly focused on individual investors in the Western world; however, important psychological differences may exist between investors in developing economies like Pakistan and investors in developed Western cultures. Studies of risk perception also find that people in Asian cultures (Test groups were China, Japan and Hong Kong) are less risk averse than people in Western cultures like the United States, Germany and Poland (Kleinhesselink & Rosa, 1991; Keown, 1989; Weber & Hsee, 1998). Additionally, because the cognitive biases may be learned, differences in cultural life experiences and education may impart significant differences in the cognitive biases (Kim & Nofsinger, 2008), so the bottom line is that there is yet a paucity of research in the area of psychological biases and their impact on the investors' decision-making in developing countries. To fill this gap, the research aims to examine the existence of the following four behavioral biases, i.e., beliefs, conservatism bias, loss aversion bias and regret aversion bias among individual investors and tries to consider their impact on the investor's behavior.

Conceptual Framework

Figure 1 shows the conceptual framework for the proposed research. This framework comprises four independent variables, which are beliefs, conservatism, regret aversion and loss aversion and one dependent variable, i.e., decision-making. These variables are used to determine how they influence the decision-making power of investors.



Based on the above discussion, the following four hypotheses can be developed in order to examine the impact of psychological biases on the investor's decision-making process.

- H₁: Beliefs have a significant impact on the investor's decision making.
H₂: Conservatism has a significant influence on the investor's decision making.
H₃: Regret has a significant effect on investor decision making.
H₄: Loss Aversion has a significant impact on investor decision making.

Data and Methodology

To collect data for the study, a sample size of 100 investors from the Karachi Stock Exchange was chosen as the study setting. Convenient sampling was used to sample the individual investors. The research tool used for the proposed study was a questionnaire, which was adopted from the research study of Chin (2012). The first part of questionnaire comprised of the investor's demographics like age, gender, qualification and occupation; the second portion consisted of three questions which were used to examine the investors' trading experience, their attitude towards risk taking and their source of trading while the third part was based on 26 closed ended questions related to the beliefs, conservatism, regret aversion, loss aversion and decision making of investors in order to test the various hypothesis. Beliefs were measured through six items, conservatism through seven items, regret aversion through four items, loss aversion through four items, while decision making was measured by using five items. Responses to the questionnaire items were elicited on a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". Respondents were required to answer all the questions based on their recognition and viewpoint. The data were analyzed using descriptive statistics, correlation and regression tests. For the proposed study, the regression model is as follows:

$$DM = \beta_0 + \beta_1 (Beliefs) + \beta_2 (Conservatism) + \beta_3 (Regret) + \beta_4 (LA) + \varepsilon$$

Results and Discussions

Descriptive Statistics

Descriptive statistics describe the data by providing an overview and summary of the respondents' demographics and trading experience in the Karachi Stock Exchange. Table 1 shows the demographic details of the respondents, demonstrating that 96% (96) of the respondents are males trading their securities in the stock exchange, while the percentage of female investors is very low, i.e., about 4% (4) of the total respondents. This indicates that the majority of traders in the Karachi Stock Exchange are males; however, female participation in stock trading is very low in the context of Pakistan. As far as the age of traders in the Karachi Stock Exchange is concerned, the majority of traders (65%, 65 investors) are over 30 years of age. Investors in the age limit of 26-30 years have a frequency of 29, i.e., 29% of the total sample, while investors less than 26 years cover a very small portion of the market. The qualification of most investors (72%) was below the graduation level, which reveals that they are working in ISE on the basis of their experience rather than their qualification. Only 7% of the respondents were students, 35% were doing their own businesses, 28% were govt. or private employees, while the remaining 30% belonged to various other occupations.

Table 1

Descriptive Statistics

Items		Frequency	Valid %	Cum. %
Gender	Male	96	96	96
	Female	4	4	100
	Total	100	100	
Age	20-25	6	6	6
	26-30	29	29	35

	Above 30	65	65	100
	Total	100	100	
Qualification	Master	12	12	12
	Bachelor	16	16	28
	Others	72	72	100
	Total	100	100	
Occupation	Student	7	7	7
	Business	35	35	42
	Employee	28	28	70
	Other	30	30	100
	Total	100	100	

Investors Trading Experience, Risk Attitude and the Source of Trading

Table 2 represents the investors' trading experience in the Karachi Stock Exchange. The figures reveal that 35% of investors in the sample have more than 10 years of experience, while a comparatively high frequency (39) is observed among investors who with 0 years. So investors with less experience are also trading in the market, which is about 26% of the total sample size. Considering the risk attitude of Pakistani investors, the majority were found to be risk averse, which indicates that investors in Pakistan are reluctant to take risk and immediately sell out securities to acquire small capital gains rather than having a preference for dividends. This may be the reason for the absence of long-run investment in Pakistan. Besides that, a very high proportion of investors (52%) were found to be trading online in the market.

Table 2

Investors Trading Experience, Risk Attitude and the Source of Trading

Items		Frequency	Valid %	Cum. %
Trade Experience	Less than 5 years	26	26	26
	5-10 years	39	39	65
	Above 10 years	35	35	100
	Total	100	100	
Risk Attitude	Risk seeker	23	23	23
	Risk averse	46	46	69
	Neutral	31	31	100
	Total	100	100	
Source of Trading	Dealer	48	48	48
	Online	52	52	100
	Total	100	100	

4.3 Reliability Analysis

Since the questionnaire was adapted from a Western environment, it was crucial to measure its reliability to ensure the applicability of the adapted research tool in the Pakistani setting. The internal reliability of each instrument used to measure the variables, as shown in Table 3, was calculated using Cronbach's alpha, which indicates the items in the questionnaire exhibit an acceptable level of reliability and consistency or Nunnally and Bernstein (1994) argued that the value of Cronbach's Alpha should be 0.6 or above for the reliability of items. For the proposed study, the values of all items lie above 0.6, which reveals the reliability and consistency of items in the questionnaire.

Table 3

Reliability Analysis

Name of Variable	No. of Items	Cronbach's Alpha
Belief	6	0.806
Conservatism	7	0.714
Regret	4	0.760
Loss Aversion	4	0.804
Decision Making	5	0.704

Pearson Correlations

Table 4 demonstrates the Pearson Correlations results. This analysis indicates the association of variables among each other and their relationship with the dependent variable. Decision making reveals a positive and significant relationship with all the independent variables ($p=0.01$). The results also reveal the existence of a significant relationship between the independent variables which may be an indication of the issue of [multicollinearity](#).

Table 4

Pearson Correlations

Variables	Belief	Conservatism	Regret	Loss Aversion	Decision Making
Belief	1				
Conservatism	0.653**	1			
Regret	0.763**	0.609**	1		
Loss Aversion	0.886**	0.667**	0.623**	1	
Decision Making	0.453**	0.504**	0.520**	0.481**	1

** Significance at 5%

Multicollinearity Test

Due to significant association between the independent variables, [multicollinearity](#) test is being performed in order to check the tolerance of [multicollinearity](#) between the variables. Table 5 represents the tolerance and VIF values of the variables. The value of VIF for each of the variable is less than 10 so this indicates that these independent variables can be used along with each other in the regression analysis.

Table 5

Multicollinearity Test

Item	Tolerance	VIF
Belief	0.142	7.023
Conservatism	0.494	2.026
Regret	0.372	2.686
Loss Aversion	0.189	5.285

The multicollinearity results indicate that all independent variables have Tolerance values greater than 0.10 and Variance Inflation Factor (VIF) values below the acceptable threshold of 10. Although Belief (VIF = 7.023) and Loss Aversion (VIF = 5.285) show relatively higher VIF values than the other variables, they remain within acceptable limits. Therefore, the findings suggest that multicollinearity is not a serious concern and all independent variables are appropriate for inclusion in the regression analysis.

Model Summary

In the model summary, the value of R (0.594) indicates a positive relationship between the dependent (decision making) and independent variables (beliefs, conservatism, regret and loss aversion). The R square value, known as the coefficient of determination, shows the goodness of the fit and its value lies between 0 and 1. Since the R square value is 0.353, this indicates that 35.3% of the variation in decision making is accounted for by the independent variables, i.e., beliefs, conservatism, regret and loss aversion. Thus, the value of R-squared indicates that the independent variables (beliefs, conservatism, regret and loss aversion) have moderate predictive capability in predicting variation in the dependent variable (decision making). The standard error of the estimate refers to the amount of error (0.58640) associated with the regression analysis in terms of predicting a particular value. It also provides information about the causal effect, which shows that the actual values are 0.58640 units dispersed from the regression line. The Durbin-Watson statistic is close to 2, which indicates there is no problem of serial correlation in the model.

Table 6

Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	0.594 ^a	0.353	0.339	0.58640	1.974

a. Predictors: (Constant), L.A, Regret, Conservatism, Beliefs

b. Dependent Variable: D.M

ANOVA

The ANOVA table indicates the model's fitness and the statistical significance of the correlation value (0.594). Model fit is indicated by the F-statistic, which should be greater than the standard value, i.e., 1.96. Since this value is reasonably higher (26.565) than the standard value (1.96), this indicates that the model is statistically fit. Based on the results output, the value of “p” is 0.000, which is less than the significance level of 0.01. This validates the existence of a highly significant relationship between the independent variables (beliefs, conservatism, regret and loss aversion) and the dependent variable (decision making).

Table 7

ANOVA Statistics

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	36.539	4	9.135	26.565	0.000 ^b
Residual	67.054	195	0.344		
Total	103.593	199			

a. Dependent Variable: D.M

b. Predictors: (Constant), L.A, Regret, Conservatism, Beliefs

Regression Coefficients

Table 8 shows the regression coefficient of decision-making. The significance values column indicates the statistical significance of relationships between the independent variables and the dependent variable. The p-value (0.029) of beliefs indicates that there exists a significant relationship between beliefs and investors' decision-making. Conservatism, Regret and loss aversion also reveal the existence of a significant impact on the investor's decision-making

process, as these variables have respective p-values of 0.006, 0.000 and 0.005 ($p < 0.05$); however, the significance of the constant value is an indication that certain other factors can also influence the decision-making process of investors regarding their investments in the stock market. Thus, the results of this study show that H_1 , H_2 , H_3 and H_4 are accepted; thereby, supporting the results of previous studies.

Table 8

Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t-Stat	Sig.
	β	Std. Error	β		
(Constant)	0.737	0.312		2.362	0.019
Beliefs	0.356	0.162	0.336	2.198	0.029
Conservatism	0.279	0.101	0.227	2.773	0.006
Regret	0.454	0.106	0.404	4.282	0.000
Loss Aversion	0.410	0.145	0.374	2.826	0.005

a. Dependent Variable: D.M

Conclusion

The evidence documented in this study reveals psychological biases as the most significant factors that could substantially impact investors' decision-making. The results show a significant relationship between all independent variables (beliefs, conservatism bias, regret and loss aversion bias) and the dependent variable (investors' decisions), which is consistent with previous studies. To illustrate, the findings suggest that investors rely on beliefs while making investment decisions. Their beliefs might be based on the idea that whatever an analyst recommends is the most appropriate decision for them or they might believe they should follow the market trend when buying and selling different securities. Besides that, they may also overreact to the news, i.e., they believe that their actions should be in accordance with the information that they receive from the market. Though it could be a rumor or it could be false but still they according to their beliefs without verifying it. Investors are advised not to rely too much on beliefs and overreact to the news, as this is likely to lead them to wrong decisions. Also, investors should not stick to their beliefs and should be willing to adapt their attitudes and decisions to changing economic trends. Investors are characterized as risk seekers and risk avoiders. Based on this characterization, risk-avoiding investors who have previously experienced losses may be reluctant to buy particular stocks that may offer better returns; they prefer to hold their losing investments until they no longer receive appropriate returns. Though it might be appropriate for them to buy those stocks at that particular moment, they still won't opt for it. This reluctant attitude may sometimes result in missing out on many attractive opportunities, thereby creating a feeling of regret among investors that, despite holding that investment for too long, they not only have to face losses but also miss more attractive and profitable opportunities. Thus, the findings of this study are consistent with most of the evidence presented by researchers in other countries (Chin, 2012, Shefrin, 2009).

The insights provided by this study, if incorporated by investors in their decision-making, can help investors identify those biases in their personality and help them avoid making wrong investment decisions. As this study only covers a very small sample size of investors making investments in the Karachi Stock Market, future studies could incorporate a large sample size of investors from the Karachi Stock Exchange and extend to cover other areas like Karachi and Lahore, which are rich in ethnicity and culture.

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