FOLLOWING THE CROWD OR MAKING INFORMED CHOICES? THE IMPACT OF HEURISTIC AND PROSPECT BIASES ON PORTFOLIO MANAGEMENT AND PERFORMANCE: EVIDENCE FROM PAKISTAN'S STOCK MARKET DOWNTURN IN 2022

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ABSTRACT

The study aims to examine the influence of heuristic and prospect theory biases on the portfolio management and performance (PMP) of individual investors in Pakistan, a country that has experienced significant market fluctuations due to a deep debt crisis, currency devaluation, political instability, and a shortage of foreign reserves. Data was collected from 400 individual investors trading on the Pakistan Stock Exchange. The data revealed that PMP is positively and significantly influenced by regret aversion, loss aversion, overconfidence, anchoring bias, and mental accounting, while availability bias and the gambler's fallacy have insignificant impact. The study suggests that investors with higher levels of these biases are more likely to achieve better PMP, and using mental accounting strategies may improve PMP. However, overconfidence may also lead to excessive risk-taking and lower performance in certain cases. Regret aversion may lead to suboptimal investment decisions in some cases. Study recommends the investors should consider the potential risks associated with overconfidence and regret aversion. By understanding these biases, they can make more informed and objective investment decisions that lead to better PMP. A major significance of this paper is it examines the prominent heuristic and prospect behavioral factors that affect portfolio formation and performance of individual investors in Pakistan.

INTRODUCTION

The financial markets have undergone changes over time, driven by technological advancements. This has led to the availability of increasingly complex information accessible

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to an investor, who can now choose from various alternatives in the financial markets (Fang & Qamruzzaman, 2021). According to the Efficient Market Hypothesis (EMH), all available information related to a market or investment is already reflected in its prices. and, therefore, financial markets are efficient, and investors are assumed to be rational, logical, and adhere to the principles of expected utility theory. In contrast to the Efficient Market Hypothesis (EMH), various studies have demonstrated that individuals exhibit irrationality, inconsistency, and incompetence in their decision-making processes when dealing with uncertain situations. These findings have been supported by (Zeynivand et al., 2023; Kumar et al., 2022; Adil, Singh, & Ansari, 2022; Cascão, Quelhas, & Cunha, 2022; Mittal, 2022) and earlier prominent studies Tversky and Kahneman (1974), and Thaler (1994). Gavrilakis and Floros (2022) argue that individuals' emotions and feelings influence their decision-making in both personal and professional settings.

Markowitz's portfolio theory offers a deterministic model for achieving optimal asset and portfolio allocation, but it is built on several highly unrealistic behavioral assumptions. Individuals make investment decisions based on more than just economic criteria. They also consider perceptions, attitudes, beliefs, and experiences. According to Gavrilakis and Floros (2022), investment decisions are influenced by expectations and preferences within the constraints of the budget and the market.

Portfolio theory emphasizes the importance of diversification and risk management techniques. However, studies have shown that investors who are overconfident tend to hold undiversified portfolios as a result of their excessive self-assurance in their abilities. Additionally, many investors tend to focus on assessing risk at the individual asset level, rather than comparing it at the portfolio level, which often results in an overlooked diversification strategy (De Bondt, 1998). It has been found that investment decisions are significantly influenced by psychological and emotional factors. Therefore, gaining a better understanding of these factors can assist in identifying the best investment options and defining an optimal portfolio (Antony, 2020).

According to Majewski and Majewska (2022), Behavioral Portfolio Theory (BPT) highlights the role of behavioral preferences in investors' portfolio selection and investment decisions, emphasizing the significance of considering individual preferences and goals when diversifying portfolios According to this theory, behavioral decision-making processes and crowd psychology are interconnected. The BPT provides an explanation for why investors often pursue numerous investment objectives at the same time, such as saving for retirement,

setting aside funds for emergencies, and planning for future family requirements (Mittal, Bhattacharya, & Mandal, 2022).

Behavioral Portfolio Theory (BPT)

The Behavioral Portfolio Theory (BPT) points out that an investor's investment objectives are intrinsically linked to his or her preferences. According to BPT, investors with high aspirations tend to have a greater tolerance for risk. This suggests that individuals with ambitious goals and a higher likelihood of success are more likely to select riskier portfolios (Shefrin & Statman, 2000). Such portfolios are characterized by greater market risk exposure and an overweighting of small firms (Barber & Odean, 2001).

Investment objectives are inherently tied to an investor's preferences, as highlighted by Behavioral Portfolio Theory (BPT). BPT suggests that investors with high aspirations tend to have a high tolerance for risk, indicating that those who set ambitious goals with a high probability of success are more likely to choose risky portfolios (Shefrin & Statsman, 2000). These risky portfolios are characterized by greater exposure to market risk and an overweighting of small firms (Barber & Odean, 2001).

The Performance and Factors Impacting the Pakistan Stock Exchange (PSX) in 2022

In 2022, the Pakistan Stock Exchange (PSX) experienced a substantial decline, which erased all gains made in the previous two years. The rupee value of the benchmark index decreased by 9.4%, resulting in a 15% reduction in market capitalization, equivalent to a total share value of Rs6.50 trillion. Several factors contributed to this decline, including pandemic aftershocks and inflation, which hit a 49-year high. The market experienced political instability, the suspension of the IMF loan program twice, a decline in foreign exchange reserves, and an increase in the central bank's key policy rate. This led to net sales of stocks worth $127 million, with foreign investors withdrawing their investments from the PSX for the sixth consecutive year. As a result, the average traded volume decreased by 52%, while the average trade value decreased by 67% to $34 million a day. Foreign holdings in the PSX have reduced to a total of $300-400 million, down four to five times compared to 2017. However, fertilizer, power, technology, communication, and chemical companies were the key gainers in the market. The year only witnessed three equity IPO transactions, with Pakistan's first developmental REITs project, Globe REIT Residency, and Adamjee Life Assurance Company Limited as the two main board listings.

The stock market underperformed other asset classes such as gold, which increased by 45%, the one-year dollar-based Naya Pakistan Certificate (up 36%), and the dollar (up 28%). Treasury bills, money market funds, and property indices posted returns in the range of 12–14% in 2022.

Foreign corporations continued to sell their shares on the PSX, with a net sale of $127 million. Over the past seven years, foreign corporations have sold shares worth $2.5 billion on the PSX. In conclusion, the PSX had a tumultuous year in 2022, impacted by various internal and external factors, leading to a decline in market capitalization and foreign investment.

In spite of the fact that Markowitz's portfolio theory provides a deterministic model for optimal asset and portfolio allocation, it is based on a number of highly unrealistic behavioral assumptions (Antony, 2020). In addition to determining the expected return and their subjective possibilities, our beliefs and information also determine the values and utilities of these outcomes. Ultimately, psychological factors play a crucial role in how we perceive economic phenomena. Psychological biases can impact the decision to invest and can be categorized along two dimensions: heuristic factors (such as, availability bias, gambler's fallacy, anchoring bias, and overconfidence), and prospect factors (such as loss aversion, mental accounting, and regret aversion). To assess portfolio management and performance, this study utilizes the satisfaction level of portfolio performance as a criterion, which involves comparing investors' present real return rates to their expected return rates and the market's average return rate (Abdin et al., 2017). Despite the existing research on behavioral finance and its impact on investment decisions, there is still a gap in the literature when it comes to exploring the influence of behavioral factors on portfolio management. Furthermore, most studies on investor behavior and portfolio performance have been conducted in developed capital markets, neglecting the unique challenges faced by investors in emerging markets. (Gavrilakis & Floros, 2022) The current study addresses this gap by focusing on the Pakistan market, which has experienced significant economic difficulties in last year.

Studies conducted in the field of behavioral finance, which have utilized various approaches such as experimental methods and diagnostic assessments, have given conflicting and inconsistent research results. Some studies (Quang, Linh, Van Nguyen, & Khoa, 2023; Cascão, Quelhas, & Cunha, 2022; Sherani & Naveed, 2022; Wei, 2018; Gavrilakis & Floros, 2022) suggest that investor behavior positively influences investment decisions, while others (Shah et al., 2018; Galaoritis et al., 2016) argue that it has a negative impact. A third group of studies

(Anderson et al., 2018) report no significant effect. These research gaps are examined in the current study using data from individual investors on the Pakistan Stock Exchange.

LITERATURE REVIEW

Behavioral finance theories draw on cognitive psychology to explain how the human decision-making process can be influenced by various cognitive misconceptions. These illusions can be explained by prospective theory and heuristic theory (Glöckner, and Betsch, 2008). A key aspect of these theories is that they provide an alternative to classical finance theories by emphasizing that there are multiple biases that can affect the decision-making process when it comes to making investment decisions.

According to the theory of behavioral finance, people tend to put probabilities on the potential outcomes of their actions, even in the face of uncertainty, which is critical to take into account when making decisions (Costa, Carvalho, & Moreira, 2019). The theory was originally developed by (Tversky and Kahneman, 1974).

Heuristic Theory:

"Heuristics" were originally used to refer to "finding out" or "discovering" to simplify decision-making, particularly in ambiguous and intricate settings (Ritter, 2003). According to Tversky and Kahneman's (1974) differentiation between rational and irrational decision-making, the former is accomplished by simplifying the complicated task of evaluating probabilities and predicting values into a more manageable judgment. According to Ayaa et al., (2022), heuristics refer to "the process by which people draw conclusions based on the information they have at their disposal."

Heuristic Theory Factors

Anchoring

According to Kahneman and Tversky (1979), the anchoring effect is a situation where investors rely on irrelevant and inappropriate information for predicting the future value of financial instruments. Such irrelevant information may include emotional and extraneous factors like speculation or false beliefs, as highlighted by Kallinterakis, Munir, and Radovic-Markovic (2010). Due to this cognitive bias, investors often hold on to investments that have lost value, disregarding fundamental factors (Kempf & Ruenzi, 2006). According to Waweru et al. (2008), the anchoring bias can cause numerous investors to make inaccurate financial judgments, including purchasing undervalued investments or selling overvalued ones.

Several studies, including Sherani and Naveed, (2022), Gavrilakis and Floros (2022), and Ishfaq and Anjum (2015), have shown that the anchoring heuristic can have a positive impact on investment performance. Specifically, these studies have found that anchoring can lead to significant enhancements in investment performance.

Gambler Fallacy

The gambler's fallacy denotes to an incorrect assumption that a specific event is less probable to occur in the future after it has occurred repeatedly. According to this belief, the probability of the event remains constant, which is not always true.

Several behavioral factors have been found to influence investment performance and investment decisions, and Sherani and Naveed, (2022), Gavrilakis and Floros, (2022) reveal that the gambler's fallacy heuristic significantly impacts financial outcomes. According to Aziz and Khan (2016), the gambler's fallacy positively impacts individual investors' investment performance.

Availability bias

It is common for investors to rely on easily accessible information and overlook the importance of diversification and prudent portfolio management. According to Javed, Bagh and Razzaq (2017) this behavior can have a significant impact on future investment decisions and is commonly known as availability bias.

According to Gavrilakis and Floros, (2022), availability bias substantially influences individual investors' investment performance.

Overconfidence bias

According to Ahmad and Shah (2020) Confidence is typically a positive characteristic exhibited by investors, instilling courage in their investment decisions. However, overconfidence often causes investors to disregard risk and uncertainty, which contradicts this positive behavior. Typically, such overconfidence is fueled by past successes, which encourages more trading, but increases the chances of failure.

Prospect theory

When it comes to making investment decisions, investors can use two decision-making theories: Expected Utility Theory (EUT) and Prospect Theory. EUT helps investors make rational decisions, while Prospect Theory helps them make subjective decisions (Li, Zhou, & Tan, 2022). Kahneman and Tversky (1979) argue that the prospect theory, which is an

alternative to the expected utility theory (EUT), can elucidate why investors tend to gravitate towards gambling and insurance.

Prospect Theory, unlike the traditional expected utility theory, proposes that investment decisions are shaped by several factors (Waweru et al., 2008).

Prospect Theory Factor:

Loss aversion

According to Kahneman, Knetsch, and Thaler (1991), loss aversion refers to an individual's inclination to minimize losses as much as possible while seeking to obtain gains. Previous studies reveal that losses have twice the psychological impact of gains. It is common for investors to avoid losses when making investment decisions. Gupta and Shrivastava (2022) assert that investors are more concerned about avoiding losses than gaining profits.

Mental Accounting

The concept of mental accounting involves the subjective valuation of money based on individual criteria, which can lead to unfavorable outcomes. This approach is based on cognitive categorization principles (Zhang & Sussman, 2017). Hahnel et al. (2020) point out that individuals may make incorrect mental assessments, leading to irrational decisions and investors habitually make irrational choices, such as investing in low-interest savings accounts or carrying large credit card debts.

Regret aversion

According to Loomes & Sugden (1982), regret aversion is the tendency of investors to avoid making decisions that may result in future regret. There are several ways in which regret aversion can manifest itself in investment decisions. Additionally, investors may use tax-loss harvesting strategies by selling their losing investments to offset capital gains taxes (Khorana, Servaes, & Tufano, 2009). Lehenkari & Perttunen (2004) have shown that regret aversion leads to suboptimal investment decisions.

Behavioral Bias and Portfolio management

As outlined in Markowitz's Portfolio Theory, investors make decisions based on their risk-return trade-off without considering their behavioral influences. In spite of this, behavioral biases influence the risk and return of portfolios as investors make rational decisions (Gavrilakis & Floros, 2022).

Shefrin and Statman (2000) first introduced the concept of optimizing portfolio selection, taking into account investors' behavior, through Behavioral Portfolio Theory (BPT). They use

a mental account, represented by a multi-layered pyramid that contains corresponding aspiration levels and risk attitudes, to build their portfolios (De Bondt et al., 1985).

Theoretical and empirical framework

Dangol and Manandhar (2020) investigated the impacts of several heuristic biases, such overconfidence bias, representative bias, anchoring and adjustment bias, and as availability bias. These biases have also been recognized as noteworthy factors leading to irrationality in investment decision-making in previous studies conducted by Siraji (2019), Bakar and Yi (2016), and Khan et al. (2021).

The study conducted by Siraji (2019) found that anchoring, availability bias, and representational bias can all positively affect stock investments. The overconfidence bias, however, significantly adversely impacted the success of stock investments at the Colombo Stock Exchange.

In a separate study conducted by Shah et al; (2018) on the Pakistani stock exchange (PSX), individual investors who were actively trading were found to be susceptible to overconfidence, representativeness, availability, and anchoring biases, which can negatively impact their investment decisions and perceptions of market efficiency. Similarly, Javed et al. (2017) discovered that heuristic biases, such as herding effects, overconfidence bias, and representativeness, can lead to perceived investment success.

In the research conducted by Bakar and Yi (2016) on investor decision-making, it was noted that availability bias and overconfidence significantly influenced investment decisions, whereas the herding bias had no effect on the results.

Kengatharan and Kengatharan (2014) utilized data from the Colombo Stock Exchange to examine the impact of biases on individual investors' investment decisions. Bakar and Yi (2016) research found that overconfidence and regret aversion bias had a positive impact on investors' decisions, while herding behavior had no effect on investment decision-making.

Ul Abdin et al. (2022) conducted a study on cognitive biases in Pakistan and found that representative bias, anchoring, overconfidence bias, and risk aversion had a strong positive influence on investment decisions.

Tversky and Kahneman's (1974) research on biases identified representativeness, availability, and anchoring as the three primary heuristics used for decision-making under ambiguity, which are significant in investment decisions due to the unpredictable nature of the stock market. This irrationality is influenced by both cognitive and emotional factors (Novianggie & Asandimitra,

2019) Investors use intuition, perceptions, emotions, and thinking to make complex judgments in unpredictable markets (Kahneman & Riepe, 1998), which are often illogical due to cognitive biases and incomplete information (Du & Budescu, 2018). According to Bowers & Khorakian (2014), investors base their investment decisions on the information available, and heuristic biases affect both experienced and inexperienced investors (Elliot, Rennekamp, & White, 2018).
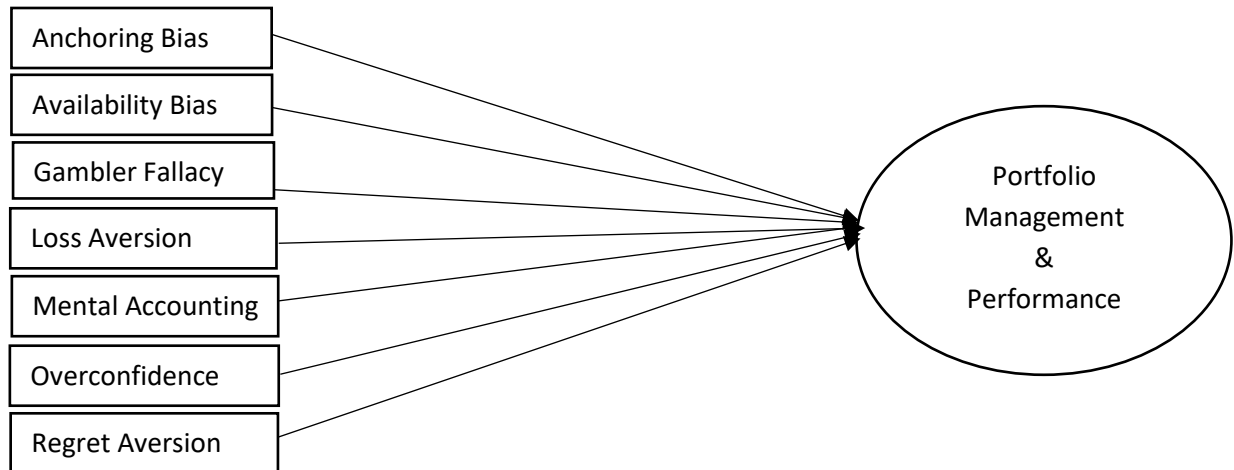
Conceptual Framework

Figure 1: The research model of behavioral factors' impacts on investment decisions and performance of individual investors at (Source: The authors)

Table 1: Behavioral Variables and Theory

S. NO	Behavioral Variable	Theory
1	Overconfidence Anchoring Gambler's fallacy Availability bias	Heuristic
2	Loss aversion Regret aversion Mental accounting	Prospect Theory

Hypothesis of study:

H_1: Anchoring Bias has a significant Impact of Portfolio Management & performance

H_2: Availability Bias has a significant Impact of Portfolio Management & performance

H_3: Gambler Fallacy has a significant Impact of Portfolio Management & performance

H_4: Loss aversion has a significant Impact of Portfolio Management & performance

H_5: Mental Accounting Bias has a significant Impact of Portfolio Management & performance

H_6: Overconfidence Bias has a significant Impact of Portfolio Management & performance

H_7: Regret Aversion Bias has a significant Impact of Portfolio Management & performance

METHODOLOGY

Based on a positivist paradigm, the study presented in this article uses empirical data to detect real events in stock markets, which are then elaborated logically by means of a deductive methodology. We determine the validity of any assertion by comparing it with the information obtained through a primary survey and our knowledge claims based on behavioral theory predictions. A survey-based questionnaire was used to collect responses from approximately 400 investors trading on PSX. The questionnaire used in the survey was developed based on existing literature and was slightly reworded after testing for content and face validity. It included two parts, the first of which focused on demographic information and investor profile, consisting of 10 questions adapted from Pompian (2008). Behavioral biases were adapted and measured with a five-point Likert scale ranging from strongly disagree or 1 to strongly agree or 5. The validity and reliability of the instruments used in the survey were checked using Cronbach's Alpha. While the instruments were adopted from the literature and have been widely used in different countries, content, and face validity were ensured by consulting three investment professionals. These professionals provided recommendations for slight rewording of the instrument.

The present study involves a population that is not precisely known. According to Parker and Rea (2005), a sample size of 385 with a margin of error of 5% and 95% confidence level is needed for a population of 50,000 or above. However, the G* Power Software was utilized to determine the sample size for research from an unknown population. G*Power is a comprehensive stand-alone power analysis program designed for statistical tests typically employed in social and behavioral research (Erdfelder et al., 1996). For this study, G-power software suggested a sample size consisting of 300 individual investors who trade on the Pakistan Stock Exchange. However, a sample size of 349 investors was selected through a random sampling technique and questionnaires were distributed.

Table 2: Measurement of Variables

S. No	Underpinning Theory	Variable	No of Item	Source
1	Heuristic Theory	Overconfidence	2	Cao, Nguyen & Tran (2021
			4	(Nyamute,, 2016)
		Anchoring	2	Cao, Nguyen & Tran (2021
			2	(Nyamute,, 2016)
			2	Pompian (2012)
		Gambler's fallacy	2	Cao, Nguyen & Tran (2021
			3	Shefrin, 2002
		Availability bias	2	Barber,& Odean, (2008).

2	Prospect theory	Loss aversion	06	Cao, Nguyen &Tran (2021
		Mental Accounting	05	
		Regret Aversion	03	
3	Investment performance	Portfolio Management & Performance	03	Cao, Nguyen & Tran (2021)

ANALYSIS

Table 3: Reliability and Validity:

Construct	Cronbach's alpha	Composite reliability (rho)	Average variance extracted (AVE)
Anchoring Bias	0.909	0.932	0.704
Availability Bias	0.865	0.937	0.881
Gambler Fallacy	0.853	0.895	0.630
LOAV	0.847	0.887	0.568
MACC	0.914	0.936	0.747
Overconfidence	0.816	0.871	0.553
PMP	0.741	0.853	0.660
REAV	0.814	0.889	0.727

In Table 3, statistics for Cronbach's alpha and Composite reliability of the study's constructs are presented. The statistics indicate that the Cronbach's alpha value for all scales is greater than 0.70, ranging from 0.741 to 0.914, indicating a good reliability of the items' construct. Similarly, the Composite reliability value for all constructs ranges between 0.741 and 0.914, exceeding the acceptable value of 0.70, demonstrating excellent internal consistency reliability. In Table 3, the AVE values are presented for each construct in the current study. The results indicate that all constructs have AVE values greater than 0.5, providing evidence for the presence of convergent validity in the model.

Discriminant Validity

Table 4: Discriminate Validity (Heterotrait-Monotrait Criteria)

Construct	Anchoring Bias	Availability Bias	Gambler Fallacy	LOAV	MACC	Overconfidence	PMP
Anchoring Bias							
Availability Bias	0.317						
Gambler Fallacy	0.222	0.834					
LOAV	0.339	0.790	0.717				
MACC	0.292	0.767	0.824	0.693			
Overconfidence	0.254	0.793	0.852	0.717	0.855		
PMP	0.471	0.841	0.816	0.847	0.854	0.830	
REAV	0.226	0.415	0.444	0.449	0.460	0.418	0.518

Table 4 presents the HTMT values between different constructs, which is an important measure of their discriminant validity. The HTMT value of less than 0.9 is considered as a good indicator of high discriminant validity, suggesting that the constructs are measuring distinct concepts without much overlap. Conversely, HTMT values greater than 0.9 may indicate some degree of overlap between constructs. As shown in Table 4, all of the HTMT values are less than 1, thus indicating that the scale has satisfactory discriminant validity based on the HTMT criterion.

Fornell-Larcker's (1981) criterion

Table 5: Fornell-Larcker's (1981) criterion

Construct	Anchoring Bias	Availability Bias	Gambler Fallacy	LOAV	MACC	Over-confidence	PMP	REAV
Anchoring Bias	0.839							
Availability Bias	0.297	0.939						
Gambler Fallacy	0.205	0.721	0.794					
LOAV	0.308	0.677	0.615	0.754				
MACC	0.277	0.686	0.737	0.617	0.864			
Overconfidence	0.238	0.692	0.745	0.625	0.765	0.744		
PMP	0.387	0.679	0.661	0.682	0.712	0.686	0.812	
REAV	0.201	0.351	0.368	0.371	0.402	0.358	0.405	0.853

In Table 5, the diagonal values correspond to the square root of the AVE for each construct. Based on the statistical results presented in the table, it is evident that the model's constructs demonstrate discriminant validity. This is because the diagonal values for all constructs are higher than their corresponding latent variable correlations.

Table 6: Collinearity Statistics (Inner VIF Values)

Construct	Portfolio Management & Performance (PMP)
Anchoring Bias	1.144
Availability Bias	2.789
Gambler Fallacy	3.046
Loss Aversion (LOAV)	2.154
Mental Accounting (MACC)	3.088
Overconfidence	3.114
Regret Aversions (REAV)	1.242

The Above table 6 VIF value below 5 indicates no multicollinearity among variables while a value below 10 indicates acceptable multicollinearity.

Table 7: Measurement of R-Square

	R-square	R-square adjusted
Portfolio Management & Performance (PMP)	0.656	0.648

Table 7, the R^2 value for determining effect of heuristic and prospect factors on portfolio management and performance is 0.656, which is a good value. Thus, the independent variables selected can explain 65.6 % of the variation in the portfolio management and performance.

Table 6: Path coefficient

	Hypothesize Path	Path Coefficient	Sample mean (M)	(STDEV)	T statistics	P values	Decision
H_1	Anchoring Bias -> PMP	0.145	0.149	0.038	3.782	0.000	Support
H_2	Availability Bias -> PMP	0.126	0.125	0.065	1.943	0.052	Not Support
H_3	Gambler Fallacy -> PMP	0.088	0.090	0.067	1.313	0.189	Not Support
H_4	LOAV -> PMP	0.235	0.236	0.061	3.849	0.000	Support
H_5	MACC -> PMP	0.235	0.232	0.066	3.541	0.000	Support
H_6	Overconfidence -> PMP	0.148	0.149	0.061	2.420	0.016	Support
H_7	REAV -> PMP	0.064	0.063	0.032	2.018	0.044	Support

H1 postulates a positive relationship between Anchoring Bias and Portfolio Management and Performance (PMP). The analysis revealed a significant path coefficient of 0.145 and a T

statistic of 3.782 at a P value of 0.000, indicating that the hypothesis is supported. This finding suggests that investors with higher levels of Anchoring Bias are more likely to achieve better PMP. The finding of the current study is consistent with most the of previous studies including (Malik et al., 2022; Dirir, 2022; Selim, 2021; Parveen et al., 2021).

H2 suggests that there is a positive correlation between Availability Bias and PMP. However, the path coefficient is only 0.126, and the T statistic is not significant at a P value of 0.052, with a value of 1.943. Therefore, the statistical analysis does not provide empirical support for the hypothesis and is rejected. The finding of the current study are in contrast to (Malik et al., 2022; Rehen et al., 2021; Kartini & Nahda, 2021).

H3 proposes that the Gambler Fallacy significantly impacts Portfolio Management Performance (PMP). The results of statistical analysis show that the path coefficient of this hypothesis is only 0.088, suggesting a weak positive relationship between Gambler Fallacy and PMP. The T statistic of 1.313 at a P value of 0.189 indicates that the path coefficient is not statistically significant. Empirical evidence contradicts the hypothesis. These findings imply that the Gambler Fallacy may not significantly affect the investment decisions and subsequent performance of investors. The results are contrasting to findings of (Malik et al., 2022; Sattar et al., 2020) who find a significant impact of gambler fallacy on investment decision.

H4 postulates that Loss Aversion (LOAV) has a positive impact on Portfolio Management Performance (PMP). Findings indicate that the path coefficient of this hypothesis is 0.235, indicating that PMP and LOAV are positively correlated. Furthermore, the T statistic of 3.849 at a P value of 0.000 indicates that the observed path coefficient is statistically significant. Therefore, hypothesis-4 is supported by empirical evidence. These findings suggest that investors who exhibit a strong tendency towards Loss Aversion may be more likely to make investment decisions that lead to higher PMP. The finding of study is consistent to (Rashata, 2022; Kleine, Peschke & Wuschick, 2022; Jan).

H5 The fifth hypothesis suggests that mental accounting (MACC) improves portfolio management performance (PMP). the path coefficient for this hypothesis is 0.235, indicating a strong correlation between MACC and PMP. Furthermore, the T statistic of 3.541 at a P value of 0.000 demonstrates that the observed path coefficient is statistically significant. Thus, empirical evidence supports the hypothesis. The findings suggest that investors who use mental accounting strategies may achieve higher PMPs. The finding of our study confirms the

empirical finding of previous studies (Rashata,2022; Ahmad and Wu, 2022; Dadashi et al., 2022; Vaidya (2021).

H6 states that Overconfidence is positively related to Portfolio Management Performance (PMP). The path coefficient is 0.148, which indicates a positive relationship between overconfidence and PMP. Additionally, the T statistic of 2.420 at a P value of 0.016 reveals that the observed path coefficient is statistically significant. Therefore, the hypothesis is supported by empirical evidence. These findings suggest that investors who are overconfident in their investment decisions may be more likely to achieve a higher PMP. However, it is important to note that overconfidence may also lead to excessive risk-taking and lower performance in certain cases. The findings are consistent with Oberlechner and Osler (2012) and Naik and Padhi (2015),

H7 suggests that regret aversion (REAV) has a positive impact on portfolio management performance (PMP). the path coefficient of this hypothesis is 0.064, suggesting a positive relationship between REAV and PMP. T statistic of 2.018 and a P value of 0.044 indicate that the observed path coefficient is statistically significant. The empirical evidence supports the hypothesis. According to these findings, investors who exhibit a high degree of regret aversion are more likely to make investments that result in higher PMPs. However, it is important to note that regret aversion may also lead to suboptimal investment decisions in some cases, particularly when investors avoid taking risks due to the fear of regret. Result is in contrast to Sukamulja, Meilita, and Senoputri (2019) and Hidayah and Irowati (2021) who find insignificant impact on investment decision.

CONCLUSION

Investment portfolio selection and management are complex tasks that require both investors and finance professionals to carefully evaluate a variety of factors. Portfolio considerations and behavioral biases that may influence investment decisions must be considered by investors when constructing an optimal portfolio.

Behavioral finance studies have shown that individuals are not always rational in their decision-making processes. This study investigates portfolio construction and behavioral biases in Pakistan, a country that has experienced significant market fluctuations during the past two years due to a deep debt crisis, currency devaluation, political instability, and a shortage of foreign reserves due to a current account deficit. To the best of our knowledge, no studies have been conducted in Pakistan regarding the impact of heuristic and prospect theory on portfolio

management and the performance of individual investors. The results indicate that Anchoring Bias, Loss Aversion, Mental Accounting, Overconfidence, and Regret Aversion have a positive and highly significant impact on PMP. The analysis shows a significant path coefficient and T statistic for these biases, supporting their positive relationship with PMP. However, Availability Bias and Gambler Fallacy have a weak or insignificant impact on PMP. The findings suggest that investors who exhibit these biases may achieve better PMP, but it is important to consider the potential risks associated with overconfidence and regret aversion.

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