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Emotional Biases Impact on Investment Behavior: A Comparative Study of Individual and Institutional Investors in an Asian Emerging Economy

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This study compares the impact of emotional biases on institutional and individual investors' behavior proxies; decision-making, performance and trading frequency on the PSX (Pakistan Stock Exchange). This research is conducted in the positivist paradigm, encompassing the deductive study approach. An adapted questionnaire was utilized for data collection, encompassing individual and institutional investors as the unit of analysis. Furthermore, this study used hierarchical regression and structural equation modeling techniques while relying on SPSS and AMOS for analysis of the direction and strength of the relationship. Emotional biases significantly impact individual investors' performance and trading frequency but not their decision-making. Whereas, institutional investors' trading frequency is also significantly induced by emotional biases but institutional investors' performance and decision-making are mostly unaffected by these biases. Emotional biases correlate positively with trading frequency and negatively with decision-making and performance for both individual and institutional investors. This research paper addresses a theoretical gap by being the first to explore the connections between emotional biases, investor decisions, performance, and trading frequency. Additionally, the study may aid the Securities and Exchange Commission of Pakistan (SECP) and policymakers in other emerging economies in developing strategies to mitigate the negative impact of emotional behavioral biases on investors. This study also offers a framework for all stakeholders to understand how emotional behavioral biases influence trading frequency and investment management activities.

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1. Introduction

Herff et al. (2023) emphasized the importance of understanding behavioral finance in the modern era. This understanding is crucial for investors, policymakers, and financial market analysts as it helps them avoid making emotion-driven decisions that could result in significant financial losses. Pompian (2021) highlighted that investors' irrational behavior in financial markets is heavily influenced by their psychology, and behavioral finance provides an explanation for this irrationality. In contrast, traditional finance research has largely been based on the assumption that investors are rational agents (Richards et al., 2018).

Pompian (2021) categorizes investment behavior into three main proxies: investment decisions, investment performance, and trading frequency. Whereas, Ahmed (2021) encompassed investment decisions and investment performance as investment management activities. Antony (2020) emphasized the importance of understanding the emotional behavioral factors that can influence these aspects of investor behavior in the face of modern financial challenges. Ahmed & Oriani (2022) further highlight the significant impact of emotional weaknesses on investor behavior, potentially leading to inefficient markets and loss of wealth.

Additionally, Kantomaa (2022) discusses how emotional affiliations can lead to irrational investor behavior, citing the ongoing war between Russia and Ukraine as an example. As a result, there is a growing demand from academic articles and journal editors for future researchers to explore the link between emotional biases and investor irrationality in their behavior (Akinkoye & Bankole, 2020; Kishor, 2021 & Ahmed & Oriani, 2022).Additionally, a review of previous studies indicates a connection between these biases and the investment activities and trading frequency of both individual and institutional investors(Iqbal & Bilal, 2021; Shah & Malik, 2021b&Ahmad, 2021). Likewise, in the context of Pakistan and emerging markets (Ahmad, 2021; Akinkoye &Bankole, 2020; Shafqat &Mohti, 2022)evidently highlighted that individual and institutional investors of emerging markets like PSX have never been an exception to all such irrationality.

This research aims to address the following questions: Why do investors not always make rational investment decisions? Likewise, how do emotional factors influence investors to make investment choices that go against traditional financial assumptions? And why does investment behavior differ among various types of investors?

This study contributes to behavioral finance by pioneering research works in the context of Pakistan and developing financial markets, where the emotional side of investors has never been exclusively tested with all investor behavioral proxies. Additionally, this study contributes to the existing literature related to behavioral finance by conducting a comparative analysis between institutional and individual investors of PSX, which can be related to other developing markets in Asia.

2. Literature Review

2.1 Emotional Behavioral Biases

Pompian (2021) ghettoized behavioral biases as cognitive & emotional biases and defined emotional biases as distortion in rational behavior due to emotional factors like feelings, beliefs,

and perception and further highlighted these biases as, Overconfidence bias, Endowment Bias, Self-Control Bias, Loss Aversion Bias, Regret Aversion Bias, and Status Quo Bias.

2.2 Supportive Theories

2.2.1 Prospect &Emotional Finance Theories

Prospect theory is propositioned on the way certain investors make choices when they must make investment decisions, anticipating potential gains and losses in relation to a reference point (Kahneman&Tversky, 1979). This theory also laid the groundwork for emotional biases by illuminating the loss-averse behavior of investors. The Prospect theory was associated with emotional behavioral biases by (Akinkoye &B ankole, 2020; Sapkota, 2023). Correspondingly, (Taffler, 2018) in the theory of emotional finance links investors' emotions to their investment decisions, connecting emotional concerns to both anxiety and excitement. He further documents that such emotionally biased investors have to engage in an unavoidably ambivalent association with any portfolio or asset which can easily let investors down.

2.3 Empirical Review

2.3.1 Emotional Biases and Individual Investors Behavior

Pompian (2021) segregates investment behavior into its vital proxies; investment decisions, investment performance, and trading frequency. Ahmed (2021) encompassed investment decisions and investment performance as investment management activities and defined investment decisions as "decisions of investors and firms about buying & selling with intent to attain profit in future". Similarly, Dahlquist et al. (2017) defined Investment performance as "realized returns on any investment portfolio'. Furthermore, Hu* and Chan (2005) delineated the trading frequency of investors as the "number of investments completed by an investor in some specific time interval'.

After recent pandemic Bates, (2020) highlighted that; besides other factors emotional affiliations has been key element in overtrading of investors. On similar lines, past literature apprises us that numerous researcher like Iqbal and Bilal, (2021) and Duxbury (2015) have examined the impact of emotional biases and their outcome on decision-making, performance and trading frequency of individual investors. Gao et al. (2017) and Kostopoulos et al. (2022) have elucidated the trading preferences and loss-averse behavior of individual investors.

Congruently, it was well highlighted in Elhussein and Abdelgadir (2020) study that any investor with loss-averse aptitude will always desire for investments with less affiliated losses and will always ignore flagrant expected returns from other investments. Furthermore, Bouteska and Regaieg (2018); Chun et al. (2021) realized in their study that loss aversion bias has a negative impact on the individual investors while performing in emerging markets. Likewise, studies conducted by Rauf et al. (2018); Riaz et al. (2020) in Pakistan and Isidore et al. (2020) in India clearly apprise us that the individual investors performance in emerging stock markets is noticeably encouraged by their loss-averse investment behavior and the direction of such impact is mostly negative.

Nareswari et al. (2021) and Spiwoks & Bizer (2018) research also distinctly indicates that overconfidence emotional bias has a significant bearing on the investment decisions of individual

investors and can lead to aggressive trade in stock markets and weak or not up-to-mark performance. Likewise, Harbi & Toumia (2020) documented in their research that the status quo emotional behavioral bias of Turkish individual investors diverts them from rationality which creates anomalies in financial markets. A considerable number of past studies reflect a common observation pertaining to the decisions and performance of investors which is that they show regret for their past investments which creates a barrier to inefficient decision-making, performance, and trading frequency (Vohra & Davies, 2020; Shah & Malik, 2021; Shafqat & Mohti, 2022).

Shah and Malik (2021a, 2021b) conducted two back-to-back studies on the impact of emotional behavioral biases and their impact on the trading frequency of investors and found overconfidence have a significant/positive impact and regret and loss aversion have a negative impact on trading frequency of PSX individual investors.

H1: The emotional biases of individual investors are having a significant impact on their investment decisions while trading in PSX.

H2: The emotional biases of individual investors are having a significant impact on their performance while trading in PSX.

H3: The emotional biases of individual investors are having a significant impact on their trading frequency while trading in PSX.

2.3.2 Emotional Biases and Institutional Investors Investment Activities / Trading Frequency

Ahmad et al. (2017) worked on theory and evidence pertaining to institutional investors' behavioral biases and noticeably highlighted that institutional investor's investment activities have significant linkage with emotional biases. Likewise, Arena et al. (2016) conducted a systematic literature review of studies and reported that besides cognitive biases emotional biases have a deep linkage with irrational trading patterns/frequency, performance and decision makings of institutional investors.

Likewise, Bouteska and Regaieg (2018) in USA explored two emotional biases and they are, loss aversion and overconfidence and demonstrated that irrational behavior of institutional investors had deep nexus with these two emotional biases in the case of industrial & service firms. Azimi (2019) documented in research findings that institutional investors massively suffer from behavioral biases resulting in a significant change in their investment performance. Similarly, Nguyen et al. (2020)scripted in findings that institutional investors are massively induced by emotionally driven overconfidence bias. Likewise, Lopez et al. (2022) highlighted in a recent article that decision-making of institutional investors is massively induced by overconfidence emotional bias. Accordingly, Vaid & Chaudhary (2022) documented that institutional investors emotional biases induce irrational decision-making.

Hypothesis# 4: The emotional biases of institutional investors are having a significant impact on their investment decisions while trading in PSX.

H5: The emotional biases of institutional investors are having a significant impact on their performance while trading in PSX.

H6: The emotional biases of institutional investors are having a significant impact on their trading frequency while trading in PSX.

2.3.3 Does Emotional Biases Have Same Influence on Institutional and Individual Investors Behavior?

Itzkowitz (2017) conducted a comparative analysis between individual and institutional investors, convincingly arguing that their trading patterns and investment decisions are not consistently aligned. Normally, it is assumed that institutional investors are considered more expert, and these investors have diverse strategies resulting in divergent results (Schmeling, 2007). Research findings of Jaiyeoba et al. (2019) declared equal bearing of behavioral biases (both cognitive & emotional) on both types of investors such as institutional and individual investors. Whereas Jaiyeoba et al. (2018); Chaudary (2018) research findings apprise glaring amplified impact on individual investors as compared to institutional investors.

Furthermore, Li et al. (2017) research findings apprise us that experienced institutional investors trading frequency normally does not fluctuate and their behavior and performance is rational in the majority of cases as compared to low experienced individual investors. Recently, Gunathilaka and Fernando (2021) study performed a comparative analysis on Siri Lankan investors and confirmed in study findings that institutional investors are relatively less affected by behavioral biases as compared to individual investors.

H7: Institutional investors are comparatively less influenced by emotional biases in comparison to individual investors of PSX.

3. Methodology

This study takes a foundationalism ontological approach, a positivist position concerning its epistemological assumption and adopts a quantitative methodological position (Collis & Hussey, 2009). Accordingly, keeping in view Bryman and Bell (2007); Ghauri and Gronhaug (2010) research directives on the deductive approach this study also moved from broad generalizations to specific observations. The target population for this research comprises registered institutional and individual investors of PSX. As per PSX's official website (PSX, 2022) and (MUFAP, 2022) registered investors comprise 0.22 million individual investors and 883 institutional investors. An adapted questionnaire was developed (Annex-1). Likewise, a five-point Likert scale was utilized for all multi-item construct items ranging from 1 to 5.

This study examined responses after the compilation of data from respondents of the survey with the help of SPSS and AMOS software. Firstly, the researcher conducted pilot testing checking the validity and reliability of study instruments followed by confirmatory factor analysis. Thereon, results, and vital statistics were attained for discussion and findings. Correspondingly, a hierarchical regression model was used by the researcher for testing hypotheses. The general econometric equations for this study are: -

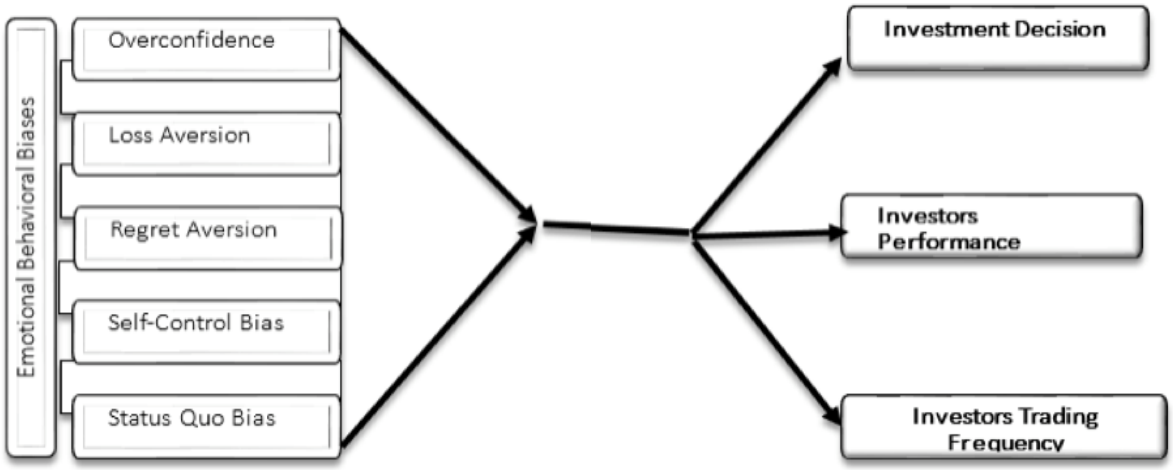
$$TF = \beta_o + \beta_1 EBB + e \quad (1)$$

$$IDM = \beta_o + \beta_1 EBB + e \quad (2)$$

$$IP = \beta_o + \beta_1 EBB + + e \quad (3)$$

In above equations **TF,** ***IDM*** and ***IP*** represents investor's trading frequency, decision making and investors performance proxies for measuring investors behavior and taken as dependent variable. Whereas $\boldsymbol{\beta_0}$ is intercept or constant term and β_1 highlights coefficients of the emotional behavioral biases of investors. Correspondingly, **EBB** represents emotional behavioral biases and **e**reflects sample residual. Correspondingly, the research model of the study is highlighted in fig-3.1.

Figure No 1: Research Model



4. Findings, Analysis & Discussion

4.1 Reliability Testing

Cronbach's alpha value and F test were carried out initially for reliability testing of the research instrument. It was noticeably highlighted in the results of pilot testing (Table-1) that Cronbach's alpha value of for all variables were visibly greater than the value of 0.7.

Table No 1: Reliability Analysis Results

Variables	Items	F(sig)	Cronbach's alpha value
Emotional biases	16	8.673(0.000)	0.712
Investor Performance	3	11.673(0.001)	0.774
Investment Decisions	4	4.690(0.000)	0.732
Trading frequency	4	6.583(0.041)	0.712

4.2 Confirmatory Factor Analysis (CFA)

Table-4.2 highlights values / pertaining to factor loadings, average variances extracted, discriminant validity and Composite Reliability. The results, apprise us that values of average variance extract are clearly ranging from 0.53 to 0.79 which shows satisfactory results. Likewise, results for discriminant validity and composite Reliability were also well above the yardstick of 0.70. Keeping in view the directions of Hair et al.(2019) model modifications few items were dropped that had weak factor loadings (Fig-1, Appendix-2) or high cross-loading error terms.

Table No 2: Factor Loadings, Reliability and Validity

Construct	Indicator	Factor Loadings	AVE	√AVE	CR
Emotional Behavioral Biases	EBB1	0.831***	0.724	0.856	0.881
	EBB2	0.830***			
	EBB3	0.863***			
	EBB4	0.820***			
	EBB5	0.845***			
	EBB6	0.824***			
	EBB7	0.823***			
	EBB8	0.816***			
	EBB9	0.834***			
	EBB10	0.874***			
	EBB11	0.867***			
	EBB12	0.885***			
	EBB13	0.858***			
Trading frequency	TF1	0.892***	0.713	0.841	0.842
	TF2	0.874***			
Investor Performance	IP1	0.826***	0.724	0.856	0.918
	IP2	0.885***			
	IP3	0.898***			
Investor Decision Making	IDM1	0.887***	0.698	0.826	0.891
	IDM 2	0.816***			
	IDM 3	0.862***			
	IDM 4	0.831***			

AVE = Average Variance Extracted; **CR** = Composite Reliability; ***p < 0.001

4.3 Mandatory Tests for Regression Assumptions

Before conducting hierarchical multiple regression analysis, this study performed mandatory multivariate tests like multicollinearity (tolerance and VIF values), normality tests (kurtosis and skewness) and Durbin Watson test for homoscedasticity (Cohen, 2014). Keeping in view the directives of Thompson et al. (2017) study standard value considered for checking multicollinearity through VIFwas 10. This study also performed the Levene test and Durbin Watson test after performing regression analysis in SPSS for checking homoscedasticity. Keeping in view the directives of Sayago et al. (2004), the P value for each variable was found to be greater than yardstick of 0.05. The results (Table-4.3 & 4.4) visibly highlight that the results of all tests were within the defined limits.

Table No 3: Normality Test

	EBB	**IP**	**IDM**	**TF**
Kurtosis	-.694	0.478	0.253	-1.119
Std. Error of Kurtosis	.457	0.934	0.813	0.534
Skewness	.159	-.135	-.027	-.102
Std. Error of Skewness	.230	.214	.114	0.459

Note(s): **EBB** = Emotional behavioral biases, **IP** = Investor performance, **IDM** = Investors decision making, **TF** = Trading Frequency

Table No 4: Multicollinearity

	Tolerance	**VIF**
Overconfidence	.588	6.324
Regret Aversion	.416	5.633
Loss Aversion	.536	6.292
Status Quo	.454	5.327
Self-control	.870	4.703

Dependent Variables: Investors Performance, Trading Frequency & Decision Making

4.4 Hierarchical Regression Analysis

Hierarchical regression analysis was conducted in three steps for this study. Initially, control variables were added to report the value of R^2. In the 2nd step, emotional behavioral biases were tested, and in the 3rd step, the impact of each emotional bias on behavioral proxies was tested separately. The analysis of Table 4.5 and Table 4.6 distinctly depicts that emotional biases have a significant negative impact ($\beta = -0.32$, $p < 0.001$) on individual investors' performance and an insignificant negative impact ($\beta = -0.16$, $p > 0.001$) on institutional investors' performance.

These results support H2 and are contrary to the assumption in H5. In the second step, the analysis manifests that emotional biases have a significant positive impact ($\beta = 0.29$, $p < 0.001$) on both individual and institutional investors' trading frequency, which also supports H3 and H6. Moreover, investors' decision-making results highlight that emotional biases have an insignificant negative impact on PSX individual ($\beta = -0.04$, $p > 0.005$) and institutional investors' decision-making, which is contrary to H1 and H4.

In the third step of table 4.5 and 4.6, the results for individual investors show that all emotional behavioral biases, except for the status quo bias, have a significant impact on the performance and trading frequency of individual investors in the PSX. However, when it comes to the decision-making of individual investors, the results were slightly different. Emotional behavioral biases, except for self-control bias and overconfidence, were found to have an insignificant impact on the decision-making of PSX individual investors. For institutional investors, the results clearly indicated that all emotional behavioral biases, except for overconfidence bias, have an insignificant impact on their performance. However, overconfidence bias has a significant impact on all three proxies of institutional investors, and loss aversion bias also showed a significant impact, but only on the decision-making and trading frequency of institutional investors.

Table No 5: Hierarchical Regression Analysis for Individual Investor's

Predictors	β	IP R^2	ΔR^2	β	TF R^2	ΔR^2	β	IDM R^2	ΔR^2
Step 1									
Control variables	0.015	0.11		0.015	0.1		0.015	0.09	
Step 2									
EBB	-0.32***	0.59	0.35	0.29**	0.56	0.38	-0.04	0.61	0.39
Step 3									
OC	0.31***			0.33***			0.283**		
LA	-0.21**			-0.19**			-0.12		
RA	-0.19***	0.61	0.38	-0.21***	0.57	0.39	-0.16	0.58	0.33
SQ	-0.14			0.18			-0.13		
SC	0.35**			0.25**			0.26***		

Table No 6: Hierarchical Regression Analysis for Institutional Investor's

Predictors	β	Investor Performance	ΔR^2	β	Trading Frequency	ΔR^2	β	Decision Making	ΔR^2
		R^2			R^2			R^2	
Step 1									
Control variables	0.017	0.13		0.015	0.14		0.015	0.12	
Step 2									
EBB	-0.16	0.51	0.29	0.29***	0.54	0.33	-0.09	0.59	0.36
Step 3									
OC	0.31***			0.33***			0.283**		
LA	0.18***			-0.19**			-0.22**		
RA	-0.19	0.64	0.37	-0.21***	0.57	0.33	-0.18	0.58	0.31
SQ	-0.14			0.18			-0.13		
SC	0.15			0.25**			0.12		

Note(s): **p < 0.05, ***p < 0.00, EBB = Emotional Behavioral Biases, FL= Financial Literacy, OC Overconfidence bias, LA = Loss aversion bias, RA=Regret aversion bias, SQ = Status quo bias, SC=sel control bias

4.5 Robustness Check

This study used the structural equation modeling technique for the authentication of hierarchical multiple regression analysis results. The findings of the SEM technique (table 4.7 & 4.8) & (Fig 4.1 & 4.2 in appendix 3) showed correspondence with previously conducted regression analysis of individual and institutional investors, which validates the results of the hierarchical regression analysis of this study.

The findings of the SEM technique showed correspondence with previously conducted regression analysis which validates the results of the hierarchical regression analysis of this study.

Table No 7: SEM Results for Individual Investors

DV		IV	β	SE	CR	P value
IP	⟵	**EBB**	-0.391* *	0.917	-0.469	0.000
TF	⟵	**EBB**	0.329 * *	0.837	0.596	0.000
DM	⟵	**EBB**	-0.12	0.437	0.231	0.017

Table No 8: SEM Results for Institutional Investors

DV		IV	β	SE	CR	P value
IP	⟵	EBB	-0.013	0.897	0.219	0.001
TF	⟵	EBB	0.492 * *	0.817	0.531	0.000
DM	⟵	EBB	-0.16	0.313	0.134	0.014

Note(s): **p < 0.05, ***p < 0.001

TF=Trading frequency, IP= investors performance, EBB = Emotional behavioral biases, DM decision making FL = financial literacy and EBB×FL = interaction terms, DV = Dependent Variabl IV = Independent Variable

4.6 Discussion

This research addresses the significant issue of emotional behavioral biases and their impact on individual and institutional investors' investment behavior in PSX. It specifically examines the influence of loss aversion, regret aversion, overconfidence, status quo, and self-control emotional biases on three investor behavioral proxies: investment decision, investor performance, and trading frequency. As a result, seven hypotheses were formulated to facilitate a comprehensive analysis. The study results regarding hypotheses H1, H2, and H3 indicate that as emotional behavioral biases increase in individual investors of PSX, both investor performance and decision-making decline due to a negative association with emotional biases. However, the results also show that trading frequency has the opposite effect: when emotional behavioral biases increase in individual investors, their trading frequency or investment occurrence also increases in the Pakistan stock market. These findings suggest that as emotional biases increase in individual investors, their behavior becomes irrational, as evidenced by the proxy of trading frequency.

Additionally, the results indicate that emotional biases have an insignificant negative impact on PSX individual investors' decision-making, which contradicts H1. Conversely, regarding investor performance, the results reveal that emotional biases have a significant negative impact, supporting H2. Furthermore, for trading frequency, the results demonstrate that emotional biases have a significant positive impact, supporting H3. Findings and results for emotional behavioral biases and individual investor's behavioral proxies were found to be inconsistent with past studies (Isidore et al., 2020) , (Rauf et al., 2018), (Bouteska & Regaieg, 2018), (Hoffmann et al., 2015), (Awais& Estes, 2019), (Lee & Veld-Merkoulova, 2016) and (Riaz et al., 2020). All of these studies have identified negative and significant relationships between certain emotional biases and their corresponding behavioral indicators, such as individual investor performance and decision-making. However, Shah & Malik (2021b) found a positive connection between overconfidence bias and the trading frequency of PSX investors, which aligns with the findings of this study.

The results of the study covering the next three hypotheses (H # 4, 5 and 6) highlighted that in the case of institutional investors when emotional behavioral biases enhance institutional

investor's performance and decision making insignificantly declines too as they had an insignificant negative association with emotional biases, which is contrary to H4 & H5.Whereas results for trading frequency reflected similarity with individual investors i.e., emotional biases have a significant positive impact on institutional investor's trading frequency which supports H6.

The results of the study also guided us that out of five selected emotional biases, only overconfidence and loss aversion bias has a significant association with all three investors behavioral proxies of PSX institutional and individual investors.Additionally, study findings and results showed a connection with two books on behavioral biases and investors behavior i.e., (Pompion, 2011, 2021). The author of these books has documented while explaining each emotional bias that in the majority of cases, emotional biases like loss aversion, regret aversion, self-control, and status quo bias have a negative impact on investor's behavior. Whereas in the case of overconfidence majority of the time, we see a positive impact on investor's behaviors as they overestimate their investment capabilities.

While checking each emotional bias linkage in step three of hierarchical regression analysis it was reported that overconfidence bias and status quo bias have a positive relationship with PSX individual and institutional investor's behavioral proxies. Furthermore, loss aversion, self-control, and regret aversion biases are negatively associated with investor's behavioral proxies.

The comparative analysis of both types of investors, as highlighted in tables 4.7 and 4.8, shows that the impact of emotional biases is less in the case of institutional investors compared to individual investors of PSX. When checking the results for individual investors, it was found that out of three proxies, two proxies – individual investors' trading frequency and investors' performance – are heavily influenced by their emotional biases. In the case of institutional investors, only trading frequency showed a significant association with emotional biases. These results also support the acceptance of the 7th hypothesis of this studyi.e., institutional investors are comparatively less influenced by emotional biases in comparison to individual investors of PSX. Such comparative analysis results between individual and institutional investors reflect familiarization with past studies like (Gunathilaka& Fernando, 2021), (Itzkowitz, 2017), (Jaiyeoba et al., 2018) & (Chaudary, 2018). These studies' comparative analyses apprise us that institutional and individual investor's process information differently and institutional investors are reasonably less induced by all types of biases as compared to individual investors.

5. Conclusion

In this study, the impact of emotional and behavioral biases on the trading performance, trading frequency, and decision-making of individual and institutional investors was analyzed. The study also discussed practical approaches for overcoming the negative effects of these biases, helping finance practitioners avoid costly mistakes. Hierarchical regression analysis and structural equation models were used to test hypotheses. The data was collected through an adapted questionnaire, providing primary quantitative data. The target population for this research consisted of registered institutional and individual investors of PSX.

The findings of the study provide clear evidence that individual investors' performance and trading frequency are considerably influenced by emotional behavioral biases. Whereas

results for individual investor's decision-making were insignificant. Corresponding in the case of institutional investors impact of emotional biases on behavioral proxies was considerably less as two behavioral proxies i.e., investor's performance & decision making were insignificantly induced by emotional biases of institutional investors. Additionally, results indicate that individual and institutional investors' trading frequency is positively affiliated with emotional biases. Furthermore, a negative association between emotional biases and both types of investor's decision-making and performance was noticed. Results also guide us that investment advisors confirm that PSX investors invest while relying on frugal and fast decision-making.

They do not observe actual market behavior before investing. Likewise, such investors are not interested in collecting real-time data on stock performance i.e., whether the selected stock is undervalued or overvalued. Likewise, investors of PSX are induced by emotional biases as being less informed, due to unawareness or lack of professional knowledge in evaluating any stock performance which brings serious repercussions in their investment decision-making/trading frequency; resultantly their trading frequency is mostly irrational. Results highlight that pessimism in individual investors is also evident from a negative association of emotional biases with investor's performance and decision-making.

The positive association of PSX individual and institutional investors with their trading frequency while being significantly induced by emotional biases depicts that PSX investors are not rational. They buy and sell securities rapidly while being under the significant influence of their emotional personality. Results also highlighted that among all emotional biases overconfidence bias, loss aversion, and regret aversion behavioral biases are key contributors to the irrational behavior of PSX individual and institutional investors. Accordingly, these three behavioral biases hold a significant challenge for policymakers as they need to find a remedial measure to bring rationality to their stock markets.

5.1 Policy Implication & Recommendations

It was well highlighted by Montier & Strategy(2002), Spindler (2011) & Asif et al. (2021) the global financial crisis upturned some serious queries on the rationality assumption of investors and warranted a genuine obligation for considering investors' emotional behavioral factors while setting policy for stock markets.

In this study, two important recommendations are presented. Firstly, it is suggested that financial planners and advisors should create a "behavioral portfolio" customized to the behavioral traits of both institutional and individual investors. This will help ensure that investment gains and returns are in line with their emotionally influenced personalities. It is crucial for financial planners and advisors to acknowledge that inherent personality biases play a significant role in investment behavior, as different personality's exhibit varying trading behaviors and decision-making processes.

Secondly, regulatory authorities, such as the Securities and Exchange Commission of Pakistan, should launch awareness and training programs to improve the understanding of PSX institutional and individual investors, with a particular focus on behavioral and emotional

biases. Taking into consideration investors' behavior and emotional biases, policymakers can steer PSX investors towards more rational trading.

5.2 Future Research Directions

It is highly recommended for future researchers to validate the findings and results of the current study in other developing stock markets, especially in Asia. Furthermore, this study may also be extended by drawing a comparative analysis between emotional and cognitive biases i.e., either emotional or cognitive biases are more detrimental in bringing irrationality in the behavior of PSX or other Asian developing stock markets. Such a comparative study will be a significant addition to the literature or body of existing behavioral finance knowledge. Lastly, the results of this study highlighted that trading frequency is the only proxy among all three proxies which is significantly affected by emotional biases in the case of the Pakistan Stock Exchange. Therefore,a study may be conducted in future to answer the reasons which bring irrationality in the trading frequency of PSX investors.

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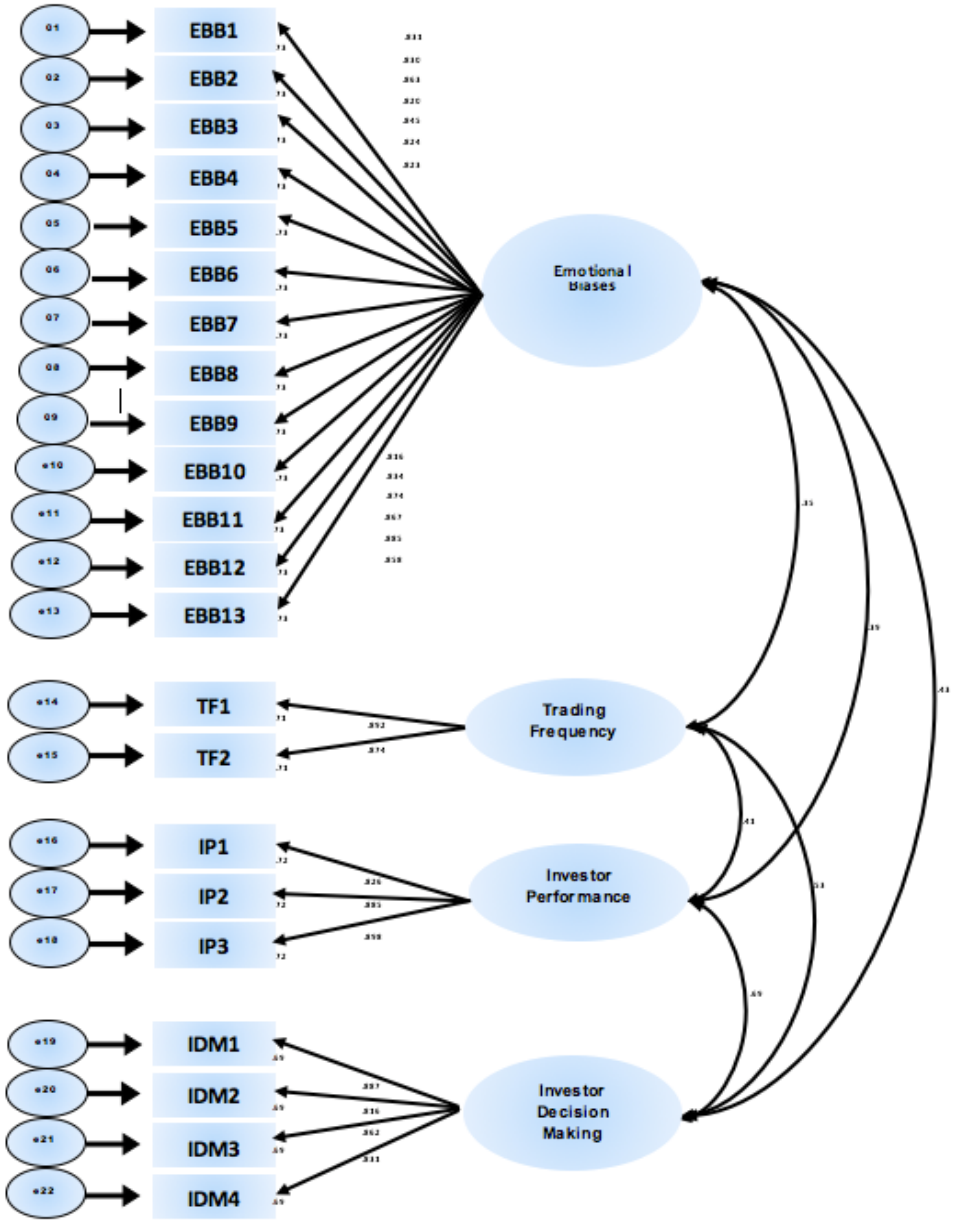
Appendix 1: Questionnaire

Construct	Question Items	Source	Cronbach's Alpha
Sec A			
Loss Aversion	I am loss averse.	(Kisaka, 2015) & (Shah & Malik, 2021b)	0.72
	If I have Rs. 500,000 excesses, I would prefer to invest in risky alternative		0.79
	If I lost Rs. 100000 in one month in an investment then then I will stop doing more investments.		0.84
Sec B			
Regret Aversion Bias	Is this fear of regretting on your investment decisions and performance likely to continue informing your future decisions or not?	(Kisaka, 2015) & (Shah & Malik, 2021b)	0.81
	Do you usually avoid making/ taking positions in the market for the fear that the outcome may be unfavorable		0.73
	Have you ever made an investment decision to buy or sell a stock that you still regret having made?		0.63
Sec C			
Overconfidence	You believe that your skills and knowledge of stock market can help you to outperform the market.	(ulAbdin et al., 2017) & (Luong and Ha, 2011)	0.72
	You are confident of your ability to do better than others in picking stocks		0.85
	You feel more confident in your own investment opinions over opinions of your colleagues or friends.		0.73
	You trade excessively in the stock market because you are sure of what step to take at all times to increase the worth of your investment		0.79
Sec D			
Status Quo Bias	I will sell securities as recommended by my financial advisor	(Pompian, 2011) & (Pompian, 2021)	0.74
	I will take action on the recommendation of financial advisor immediately.		0.73

	On financial advisor recommendation I normally response, I think about it to do honest review and get back to you in a week.		0.80
Sec E			
Self-Control Bias	I hardly ever save for retirement. I spend most of my disposable income, so very little remains available for savings.	(Pompian, 2011) & (Pompian, 2021)	0.74
	I have a tremendous amount of difficulty keeping promises to myself. I have little or no self-discipline, and I often find myself reaching out to others for help in attaining key goals.		0.72
	I always achieve a goal if it is important to me. If I want to lose10 pounds, for example, I will diet and exercise relentlessly until I am satisfied		0.75
Sec F			
Investment Decision Making	When making investments, you rely upon your instincts	Rasheed et al., 2018	0.73
	You generally make investments that feel right to you		0.75
	When you make Investment, you tend to rely on your intuition		0.82
	When making an investment, you trust your inner feelings and reactions else then accessing to all types of information		0.75
Sec G			
Investment Performance	The return rate of your recent stock investment meets your expectation.	Akhtar & Das, 2020	0.31
	Your rate of return is equal to or higher than the average return rate of the market		0.52
	You feel satisfied with your investment decisions in the last year (including selling, buying, choosing stocks, and deciding the stock volumes)		0.62
Sec H			
Trading Frequency		Graham, Harvey, et al. 2009) & (Shah & Malik, 2021b	

In general, how often do you trade in PSX?
Number of your transactions (Buying or selling of stocks) during the last Month?
Number of your transactions (Buying or selling of stocks) during the last six months?
Number of your transactions (Buying or selling of stocks) during the last year?

Appendix-2: Factor Loadings, Reliability and Validity



Measurement Model-1

Appendix 3: Robustness tests for individual and institutional investors

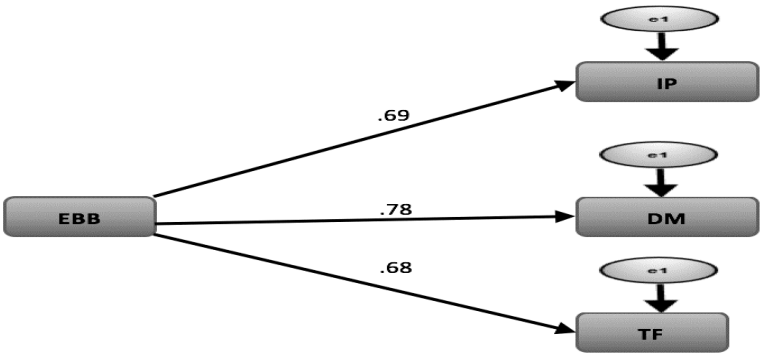


Figure - 4.1

Structural Equation Model-1

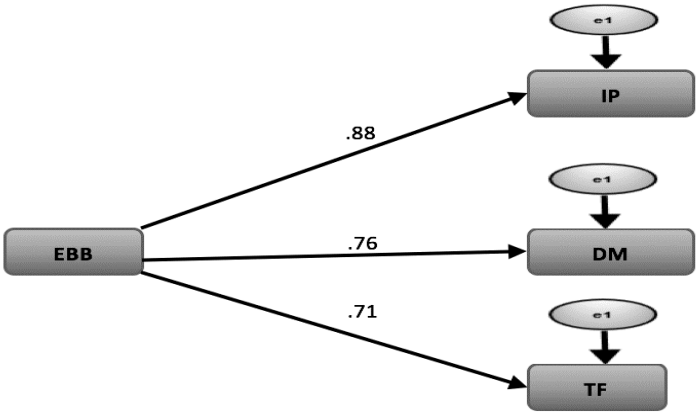


Figure - 4.2

Structural Equation Model-2

Appendix-4

Experimental Instructions

It is highlighted and stated that this study is not experimental.

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All expenses of this study are borne by the author on his own. Moreover, he is not attaining any financial/nonfinancial help from any organization.