MODERATING ROLE OF DEMOGRAPHICS ON IMPACT OF OVERCONFIDENCE BIAS ON INVESTMENT DECISION: EVIDENCE FROM PAKISTAN STOCK EXCHANGE

Mustaeen Billah

CPA, ACCA, B.Sc, Business School, Roots Ivy ICMS Lahore

Corresponding Author: *

ABSTRACT

This study analyzed the effects of overconfidence bias on individual investment decisions within the Pakistan Stock Exchange moderated by demographics. Overconfidence bias is one of the biggest cognitive biases known to affect investors, which causes investors to overestimate how much they know, and how much control they have over their decisions, thus making suboptimal and often risky investment decisions. Based on the data collected from Pakistan Stock Exchange 200 investors who currently trading in Islamabad Stock Exchange, the study finds that overconfidence has a large bearing on traders' behavior. Age also moderates the overconfidence such that the older investors would exhibit less of it in their line of decision making. Another study has found that educational background also exerts positive moderation on the overconfidence-investment decision, since more educated investors will be more confident, and thus may trade more often or more risking. In regard to the second hypothesis, the analysis reveals that gender has little moderating effect on overconfidence and investment decisions. These findings add to own knowledge of how several demographic factors influence investment decision amongst individual investor in emerging market. Based on this study, suggestions can be given to our financial advisors and policy makers to improve delivery of financially educating population and advisories to prevent adverse consequences of overconfidence bias and to enhance rationality of the populace when investing.
Keywords: Overconfidence Bias, Gender, Age, Education and Investment Decisions.

INTRODUCTION

Conventional finance posits that investors behave in an 'efficient manner and that the market is efficient (Syarkani & Alghifari, 2022). However, behavioral finance does not support this view by asserting that psychological influences, especially cognitive impairments, influence irrational decisions. There is an overconfidence bias whereby investors are overconfident in what they know and what they can do, which ends up in high turnover and risk-taking, hence low performance (Al Rahahleh, 2024). This bias is particularly useful in complex or unpredictable markets like Pakistan, where investors may not have all or accurate information and, therefore, easily fall prey to cognitive biases (Mahmood et al., 2024).

The case on the efficient market hypothesis asserts that stock prices incorporate all the available relevant information, thereby eliminating prospects of abnormal returns (Hamid & Arfeen, 2020). However, existing historical financial crises also show that people's behavior in the markets is not always rational (Quddoos et al., 2020). Modern theories like behavioral finance proposed by Quddoos, Rafique, Kalim, and Sheikh opine that people, in their decision-making processes, particularly under conditions of risk, apply heuristics or approximate means. Such heuristics generate biases such as overconfidence that shape investors' processing of information and implementation of operational beliefs (Naveed & Taib, 2021).

The roles of demographic factors, age, gender, and education, on the association between overconfidence bias as an extrinsic characteristic and actual investment decisions among the investors in

the Pakistan Stock Exchange are the focuses of this study. Evidence established indicates that specific demographic factors affect risk-taking propensity whereby young investors are relatively risk seekers while educated investors are likely to overestimate their competency, resulting in overconfidence bias (Khan et al., 2021). This research contributes to the literature on demographics in behavioral finance by providing knowledge for individual investors and policymakers to avoid overconfidence and encourage more rational decisions in the investment market. This research underscores key areas for further research; for instance, demographic moderators may mean that educational approaches designed to help investors work past their cognitive weaknesses and adopt more stable investment practices in emerging markets and beyond are the need in the future.

Literature Review
Traditional Finance and Behavioral Finance: Foundations and Contrasts

It should be noted that conventional theories of finance, like the Efficient Market Hypothesis (EMH) or Capital Asset Pricing Model (CAPM), presuppose that the investors are utility maximizers who use available information (Khan et al., 2023). These theories presume that markets are efficient where all available information is, in one way or another, reflected on stock prices, making it almost impossible for informed decisions to yield extra-market returns (Tabassum et al., 2021). For instance, proficient prognosis forecasts averagely that new stock prices quickly adjust to the new information, meaning that net buyers cannot earn above-average profits from predicting future stock prices. This perspective of rationality means that the investors behave in a reasonable manner by considering risk and return than we allow the impact of emotional biases (Naveed, 2022).

Friday's and Monday's events, together with financial crises and Black swans, have shown that investors are not totally rational. As a result, behavioral finance evolved as a competing paradigm to explain decision-making mechanisms that entail cognitive as well as emotional aspects of investors. The behavioral finance theory completely disagrees with the rationality assumption, asserting that investors always make unsound decisions based on

factors apart from good financial returns. Overconfidence is one of many examples of self-cognition that have been studied extensively as a source of investing bias, where the investor thinks that they know more than others or even the market. That may result in higher growth rates, active trading, and no attention to possible losses (Ali, 2023).

Ali (2023) established from behavioral finance studies that overconfident investors are more likely to trade frequently and, in the process, ignore any information that contradicts them or even the advice of others (Zafar et al., 2024). Overconfident investors, on the other hand, will base their decisions on their gut feelings or gut intuition rather than analytical research. These distortions in the rationality of investment processes are relevant to the study of the behavior of financial markets and have shifted the emphasis on the investigation of the demographic characteristics influencing overconfidence in investment decisions.

Overconfidence Bias in Investment Decisions

Overconfidence bias, which is the attitude that every individual has where he/she overestimates his/her personal competence or knowledge in the market, is one of the most common biases that affect investment (Begum & Siddiqui, 2024). Overconfidence makes investors fixate on their knowledge or predictive ability, and since they are overconfident, they may underestimate risks and overestimate the returns on investment (Zhang et al., 2022). Overconfidence can be expressed as an overestimation of the ability to select good investments, overlooking such factors as possible risks connected with some assets or underestimating fluctuations and stock markets' unpredictability. In the second setting of this investigation, it was ascertained that the overconfidence bias was more pronounced in an emerging market such as Pakistan because of the higher levels of information asymmetry and market volatility in these markets.

This paper found that overconfident investors are more likely to fall for the "illusion of control" and "illusion of knowledge." Self-serving bias involves making decisions based on or incorrectly predicting that one is capable of controlling risk in unstable markets. This often results in the investors' reliance on individual judgment even in situations where

information is incomplete or the investor himself is ill-equipped to interpret one or another standardized financial report (Gulzar et al., & ul Hasan, 2024). The phenomenon of overconfidence is when investors consider that access to more information means better knowledge and contributes to conventionally biased decisions. These cognitive illusions can lead investors to trade frequently, ignore the signals that are provided by the market, and take higher risks than necessary, thus reducing overall return (Ullah et al., 2020).

Investors with overconfidence rather use optimistic forecast and their subjective conscience as tools as opposed to evidence-based approaches, sometimes with ugly repercussions. For instance, self-confidence may make investors hold on to a stock for a longer time, waiting for it to increase in value, this being a common mistake among incompetent traders, or constantly trade and buy lots of options, thus increasing the trading costs and taxes, which undermine the gains. This pattern of behavior is well documented in developed markets; it is gradually becoming typical to investigate this in emerging markets where the overconfidence bias may be even more pronounced by limited market transparency and less regulatory scrutiny (Rasheed et al., 2020). In the Pakistani market, overconfidence biases may lead investor to neglect the volatility of equity or external economic conditions, affecting their returns.

Demographic Moderators of Overconfidence Bias in Investment Decisions

This paper has revealed that age, gender, and education level affect investment practices and act as moderators of the effects of overconfidence. Such factors work out the risk-taking propensity, analytical approach, and vulnerability to cognitive biases that determine overconfidence bias in investing (Khan, 2020). This research investigates the above demographic moderators in relation to the Pakistan Stock Exchange, with a focus on ideas about performance disparities caused by demographics. Overconfidence bias is partly affected by age, with age being a powerful predictor of investment choices. According to researchers, young investors are more likely to engage in risk-taking than old investors and are more likely to overestimate their abilities than old investors (Aziz et al., 2024). Smaller and less experienced business people,

especially the younger ones, may not possess adequate abilities to evaluate risks, and hence, they may overemphasize too much in self-conscion of expecting a specific movement of the market or identifying good investment opportunities. Still, the older investors are somewhat risk averse and, while playing, have more propensity to invest in safe and secure bets as opposed to high-risk high-return investments (Shafique et al., 2023). It is argued that they are less likely to be rash in decision-making, probably seeking approval from an advisor or taking adequate time to study an investment opportunity before coming to a decision. Evidence indicates that experienced and older shareholders may not be overconfident as much as younger ones are; this is because older individuals can be least affected by overconfidence bias and, thus, can make more reasonable investments even in volatile markets (Saleem et al., 2023).

There has been literature on differences in investment behavior between genders, and going by this literature, male investors have been found to be more overconfident than females (Hasan et al., 2023). Another study shows that males tend to act more actively in trading and tend to take more risks as a result of overconfidence. For instance, while engaging in investment, women are relatively more delicate than men due to their prudence in facing higher risks. Others have suggested they do this because they are more likely to identify risks and also look for a more diversified portfolio (Butt et al., 2023). Despite the evidence of gender variants indicated in prior studies, earlier research related to Pakistan's market has produced ambivalent results on the nature of overconfidence and its impact on male and female investors, elaborated as follows: However, as a rule, gender has considerable influence on the overconfidence level, and the high level of overconfidence is characteristic for men which leads to more frequent trading and correspondingly, higher proportional transaction costs (Gulzar & Ali, 2023).

There is a cascading effect of education level on the investor decision-making mechanism, and education level forms part and parcel of the moderating variable between overconfidence bias and investment choices (Rasheed et al., 2021). Self-confidence in processing market information is higher among educated investors, and they might

sometimes overdo it. Analyses show that higher education levels can lead to the belief that one can expect accurate estimates of an attribute that is difficult to measure, financial information in particular, raising the level of overconfidence. However, education does not guarantee improvement in investment decisions; instead, education helps to build confidence without proportionate improvement in expertise, which often results in biased decisions (Hussain & Rasheed, 2022). Even in the situation where Pakistan provides less actual market information, which may be more difficult to interpret correctly, the higher education level of the investors implies that they are also capable of misjudging risks and being over-confident when investing, consequently affecting their investment choices.

Age, gender, and educational background are the key demographic factors that lie at the heart of moderating overconfidence bias when making investment decisions. Risk-taking propensity and decisions depend on age, and young investors are more likely to be overconfident than their older counterparts. It also points out that gender differences mean that male investors are more overconfident and thus engage in excessive buying and selling, besides being riskier than female investors, who are more conservative (Ali, 2023). They find that while education increases confidence, it also increases the propensity of overconfidence, especially in EMH information asymmetric markets. By assessing the demographic characteristics of these samples, this study reveals the impact of overconfidence bias on the investment decisions that prevail in the Pakistan Stock Exchange and thus establishes the social relevance of enhancing financial literacy levels effectively for minimizing biases in investors' decisions. These insights can guide policymakers and financial facilities to develop interventions that anticipate or mitigate demographic differences in investment patterns, consequently guaranteeing financially stable and efficient markets in Pakistan (Kamran et, al 2020).

Conceptual Framework

Demographic factors such as age, gender, and educational background are examined in this paper in relation to overconfidence bias affecting the investment behaviors of investors on the Pakistan Stock Exchange. Overconfidence bias, where investors have a tendency to overestimate themselves and their capabilities. This often leads to many trades and dangerous investment practices. It is suggested that demographic characteristics affect risk-taking and, therefore, mediate the effect of overconfidence bias on investment performance. For instance, there may be significant differences in overconfidence proportional to the level of investment decision-making among the elderly and investors with higher educational standards, and the risk-taking/trading pattern may also differ with gender.

H1: There is a significant positive impact of overconfidence bias and investment decisions.

H2: Age significantly moderates the relationship between overconfidence bias and investment decisions.

H3: Gender significantly moderates the relationship between overconfidence bias and investment decisions.

H4: Educational background significantly moderates the relationship between overconfidence bias and investment decisions.

Methodology

This study establishes a model for analyzing the moderating effect of demographic factors, namely age, gender, and educational level, on overconfidence bias's effect on investments. Based on the procedure employed by Ranaweera and Kawshala (2022), two structural equations were proposed to test this moderating role. The first equation examines the main effects of overconfidence bias on investment decisions, and the second allows the interaction between overconfidence bias and all the demographic variables (age, gender, education) to determine if they moderate or mediate the relationship between overconfidence bias and investment decisions.

$$ID = \alpha_1 + \alpha_2 OB + e \ldots\ldots\ldots\ldots\ldots\ldots (i)$$

$$ID = \alpha_{1} + \alpha_2 OB + \alpha_3 OB \times Age + \alpha_4 OB \times Gender + \alpha_5 OB \times E.B + e \ldots\ldots (ii)$$

A cross-sectional quantitative mode of research design was used; participants were individual investors from the Islamabad Stock Exchange. Two hundred investors were chosen by means of random sampling; half of them were male and half were female. Questionnaire data were obtained over two weeks and covered demographic data, overconfidence bias, and investment decision-making behaviors. Investment decisions were quantified on a five-point Likert scale with reference to Abideen, Ahmed, Qiu, and Zhao (2023).

The reliabilities of the amount of stolen scales were determined with Cronbach's Alpha coefficient, and all of them were higher than 0.7. All statistical analyses were carried out in SPSS; frequency distributions, correlation analysis, and multiple regression analyses were employed to test the association between overconfidence bias, demographics, and investment choices. Measures of ethics were also employed by refraining from using the names of respondents while the participation was voluntary. This approach is designed to identify the correlation between demographic variables on one side and overconfidence bias's propensity to impact the investors' decisions on the other.

Results and Interpretation

The distribution of respondents by demographic category is presented in Table 01. Respondents were grouped into six age categories: 20-25 years, 25-30 years, 30-35 years, 35-40 years, 40-45 years, and above 45 years. The age distribution shows a concentration in the 30-35 years group (52 respondents), followed by the 35-40 years group (48 respondents). The youngest age group (20-25 years) had 34 respondents, while the group above 45 years had the least representation, with only five respondents. These groups offer insight into how age influences overconfidence and investment decisions in the sample population. Gender was balanced evenly within the sample, with 100 male and 100 female respondents. Gender serves as an essential moderator in examining its potential interactive effects on the relationship between overconfidence bias and investment decisions. The equal representation provides a balanced perspective on gender differences in investor behavior. Educational background was classified into four categories: Intermediate, Graduate, Post Graduate, and MS/M. Phil, with an additional category for Ph.D., which had no respondents. The majority of respondents (78) held a graduate-level education, followed by 56 respondents with an intermediate-level education. The educational background variable allows an examination of how educational attainment influences overconfidence in investment decision-making processes.

Table 01: Demographics of Respondents

S.No	Demographics	Nomenclature	Frequency	Mean	Standard Deviation
01	Age	20-25 years	34	3.21	1.39846
		25-30 years	25		
		30-35 years	52		
		35-40 years	48		
		40-45 years	36		
		Above 45 years	5		
02	Educational Background	Intermediate	56	2.1150	0.89205
		Graduates	78		
		Post Graduates	54		
		MS/M.Phil	12		
		Ph.D	0		
03	Gender	Male	100	1.500	0.50125
		Female	100		

Correlation analysis reveals relationships between overconfidence bias, investment decisions, and demographic factors (age, gender, and educational background). Overconfidence bias showed a significant positive correlation with investment decisions ($r=0.302$, $p<0.001$), suggesting that

investors with a higher level of overconfidence tend to make riskier or more active investment decisions. Age had a negative correlation with investment decisions (r=−0.308, p<0.001), indicating that younger investors tend to make riskier investment decisions compared to older investors. Gender showed an insignificant correlation with investment decisions (r=0.24 r =0.24), suggesting no significant difference between male and female investors in terms of their investment choices. Similarly, educational background had an insignificant correlation with investment decisions (r=0.138), suggesting that educational level alone does not directly impact investment decisions.

Table 2: Mean, Standard Deviations, and Correlation

Variable	Age	Gender	Educational Background	Overconfidence Bias	Investment Decisions
Age	1				
Gender	-0.229**	1			
Educational Background	-0.100	-0.017	1		
Overconfidence Bias	-0.108	-0.022	0.007	1	
Investment Decisions	-0.308**	0.24	0.138	0.302**	1
Mean	3.21	1.50	2.115	2.8188	3.13
Standard Deviation	1.398	0.5012	0.892	0.93	0.742

** Correlation is significant at 0.01 level (2- Tailed)
Correlation is significant at 0.05 level (2- Tailed)

The regression analysis was conducted to examine the impact of overconfidence bias on investment decisions and to test the moderating effects of demographic factors. The results show that overconfidence bias has a significant positive effect on investment decisions, supporting H1, with a coefficient (β=0.257, p<0.001), indicating that overconfident investors are likely to engage in more aggressive or risky investment behaviors. The regression coefficient for age was β=−0.296 significant at p<0.001. This finding suggests that younger investors are more prone to overconfident and riskier investment behaviors, while older investors tend to make more cautious decisions. The coefficient for gender was insignificant (β=−0.039, p=0.555), indicating that gender does not significantly influence the impact of overconfidence on investment decisions. The coefficient for educational background was β=0.129 significant at p<0.05, supporting H4. This finding suggests that more educated investors are likely to demonstrate increased overconfidence in their investment decisions.

Table 3: Regression Analysis

Variable	Regression Coefficient (β)	Significance (p-value)
Overconfidence Bias	0.257**	<0.001
Age	-0.296**	<0.001
Gender	-0.039	0.555
Educational Background	0.129*	<0.05

** Correlation is significant at 0.01 level (2- Tailed)
*Correlation is significant at 0.05 level (2- Tailed)

Interaction terms were created and included in a second regression model to test the moderating effect of demographics on the relationship between overconfidence bias and investment decisions. The interaction between overconfidence and age (β=−0.359, p<0.001) was negatively significant, suggesting that age negatively moderates the impact of overconfidence on investment decisions, with younger investors exhibiting a stronger effect of overconfidence bias on their choices. The interaction

between overconfidence and gender was insignificant (β=−0.079, p=0.366), indicating that gender does not moderate the relationship between overconfidence bias and investment decisions. The interaction between overconfidence and educational background was positively significant (β=0.142, p<0.1), suggesting that higher educational background strengthens the impact of overconfidence on investment decisions.

Table 4: Moderation Regression Analysis

Variable	Regression Coefficient (β)	Significance (p-value)
Overconfidence Bias	0.302**	<0.001
OB × Age	-0.359**	<0.001
OB × Gender	-0.079	0.366
OB × Educational Background	0.142+	<0.1

Note:
** Correlation is significant at 0.01 level (2- Tailed)
Correlation is significant at 0.1 level

It is evident that overconfidence bias affects investment decisions in individual investors, and several demographics moderate this bias. Overconfidence was found to significantly interact with experience, which indicates that younger investors are more likely to be influenced by their overconfidence. Overconfidence acts as a significant mediator in the extent of investment decisions: the higher the educational background, the higher the level of confidence, which, on occasion, may lead to higher risk-taking in investments. Also, the moderation by gender was not significant, suggesting that overconfidence is a similar problem for both male and female investors in this sample. The latter results reflect the multifaceted relations between demographics and cognitive biases in an investment context.

Conclusion and Recommendations

This study has the following general findings: Overconfidence bias affects the investment decisions in PSEs among individual investors. The specific findings include that overconfidence has been identified as a decisive factor influencing the investment decisions of Pakistani individuals investing in PSEs. Age and education level moderate the impact of overconfidence bias on the investment decisions of Pakistani individual investors in the PSEs. Self-confidence in oneself is a key determinant of risk-taking when making investment decisions, and demographic factors influence self-confidence. Precisely, Overconfidence is found more closely in young investors, resulting in riskier decisions rather than conservatively less biased decision-making being found in older investors. Numeracy has an influence as well, with more excellent formal education leading to higher risk propensity and sometimes danger levels among investors. Similarly, the interaction between gender and Overconfidence in investment decisions departs insignificantly from zero, implying that gender does not moderate the negative impact of overconfidence bias on investment decisions, at least in this sample.

The results have implications for policymakers and financial advisors. The results have implications for individual investors. These implications can be useful for financial advisors and investment firms to use in advising clients with respect to the overconfidence phenomenon, especially as it pertains to targeting younger and more educated investors. For policymakers, it is recommended that efforts to introduce financial education focusing on the elimination of such biases as overconfidence would assist in turning the market into an environment with well-made rational decisions and enhance market stability. It should be noted that overconfidence is particularly dangerous for the individual investor since one has to rely on his/her own knowledge and judgment: the younger the investor is, and the higher the level of education, the stronger the effects of overconfidence are. To minimize the impact of Overconfidence, the individual investor should rely on more objective investment analytics and turn to financial advisors. In conclusion, it is important to give insight into how Overconfidence impacts the post-trade outcomes

based on demographic differences to create awareness for financial institutions investors in making rational decisions on the emerging market in Pakistan.

References

Abideen, Z. U., Ahmed, Z., Qiu, H., & Zhao, Y. (2023). Do behavioral biases affect investors' investment decision making? Evidence from the Pakistani equity market. *Risks*, *11*(6), 109.

Al Rahahleh, N. (2024). The Influence of Anchoring and Overconfidence on Investment Decision-Making in the Saudi Stock Market: A Moderated Mediation Model. *Review of Middle East Economics and Finance*, *20*(1), 45-75.

Ali, M. (2023). A Study on Financial Literacy, Investors' Sentiment, and Financing Decisions with the Moderating Role of Investors' Experience: Evidence from Pakistan. *The Asian Bulletin of Contemporary Issues in Economics and Finance*, *3*(1), 15-32.

Aziz, S., Mehmood, S., Khan, M. A., & Tangl, A. (2024). ROLE OF BEHAVIORAL BIASES IN THE INVESTMENT DECISIONS OF PAKISTAN STOCK ExCHANGE INVESTORS: MODERATING ROLE OF INVESTMENT ExPERIENCE.

Begum, R., & Siddiqui, D. A. (2024). Influence of Environmental, Governance and Reputational Factors on the Performance of Delegated Investments: Exploring the Mediating Role of Overconfidence Bias and Investment Decisions in Pakistan. *Business & Economic Review*, *16*(2), 1-58.

Butt, H., Sajjad, A., Awan, K. Z., & Shakil, M. H. (2023). The Role of Behavioral Factors on Investment Decision Making: Moderating Role of Financial Literacy. *Pakistan Journal of Humanities and Social Sciences*, *11*(4), 4533-4547.

Gulzar, T. I., & Ali, N. (2023). The influence of behavioral biases on investment decisions; Moderating role of emotional stability. *Journal of Development and Social Sciences*, *4*(2), 692-708.

Gulzar, T. I., Javed, N., Ali, N., & ul Hasan, S. S. (2024). Influence of Behavioral Biases on Investment Decisions: Moderating Role of Financial Literacy and Emotional Stability in The New Normal. *Kurdish Studies*, *12*(3), 35-43.

Hamid, S., & Arfeen, I. U. L. (2020). The Impact of Behavioural Finance Biases & Demographic Factors on Financial Risk Tolerance of the Individual Investors with Moderating Role of Personality Traits at Pakistan Stock Exchange. *Paradigms*, *14*(1), 166-173.

Hasan, M., Ahmed, S. S., Mustafa, S., & Aziz, A. (2023). Risk Perception as a Mediator Between Heuristic Biases and Investment Decision Making: Case Study of Pakistan Stock Exchange. *NICE Research Journal*, *16*(4), 35-55.

Hussain, S., & Rasheed, A. (2022). Empirical Study on Financial Literacy, Investors' Personality, Overconfidence Bias and Investment Decisions and Risk Tolerance as Mediator Factor.

KAMRAN, H. W., QAISAR, A., SULTANA, N., NAWAZ, M. A., & AHMAD, H. T. (2020). Factors Influencing the Investor's Decision Making: The Moderating Role of Locus of Control. *The Journal of Asian Finance, Economics and Business*, *7*(12), 535-543.

Khan, D. (2020). Cognitive driven biases, investment decision making: The moderating role of financial literacy. *Investment Decision Making: The Moderating Role of Financial Literacy (January 5, 2020)*.

Khan, I., Afeef, M., Jan, S., & Ihsan, A. (2021). The impact of heuristic biases on investors' investment decision in Pakistan stock market: moderating role of long term orientation. *Qualitative Research in Financial Markets*, *13*(2), 252-274.

Khan, S. K., Hassan, N. U., & Islam, J. (2023). Unlocking the investment puzzle: The influence of behavioral biases & moderating role of financial literacy. *Journal of Social Research Development*, *4*(2), 433-444.

Mahmood, F., Arshad, R., Khan, S., Afzal, A., & Bashir, M. (2024). Impact of behavioral biases on investment decisions and the moderation effect of financial literacy; an evidence of Pakistan. *Acta Psychologica*, *247*, 104303.

NAVEED, F. (2022). BEHAVIORAL BIASES, INFORMATION ACQUISITION AND

DECISIONS OF INDIVIDUAL INVESTORS IN PAKISTAN STOCK EXCHANGE.

Naveed, F., & Taib, H. M. (2021). Overconfidence bias, self-attribution bias and investor decisions: Moderating role of information acquisition. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, *15*(2), 354-377.

Quddoos, M. U., Rafique, A., Kalim, U., & Sheikh, M. R. (2020). Impact of behavioral biases on investment performance in Pakistan: The moderating role of financial literacy. *Journal of Accounting and Finance in Emerging Economies*, *6*(4), 1199-1205.

Ranaweera, S. S., & Kawshala, B. A. H. (2022). Influence of behavioral biases on investment decision making with moderating role of financial literacy and risk attitude: A study based on colombo stock exchange. *Journal Homepage: Https://Sajf. Sljol. Info*, *2*(1), 56-67.

Rasheed, M. H., Gul, F., Akhtar, M. W., & Tariq, S. (2020). Dynamics of overconfidence among stock market investors in Pakistan. *International Transaction Journal of Engineering, Management, & Applied Sciences & Technologies*, *11*(4), 1-11.

Rasheed, M. H., Rafique, A., Kalim, U., & Gul, F. (2021). Elucidating the Impact of behavioral biases in Pakistan Stock Market: Moderating Impact of Financial Literacy. *Journal of Quantitative Methods*, *5*(2), 128-146.

Saleem, A., Usman, M., & Bashir, Z. (2023). Behavioral biases, financial literacy, and investment decision: A case of individual investors in Pakistan. *Business Review*, *18*(2), Online-First.

Shafique, M. R., Sohail, A., Nisar, S., & Munir, M. (2023). Examining financial decision-making of retail investors in Pakistan Stock Exchange (PSX): Moderating role of financial literacy. *Journal of Applied Research and Multidisciplinary Studies*, *4*(1), 2-22.

Syarkani, Y., & Alghifari, E. S. (2022). The influence of cognitive biases on investor decision-making: the moderating role of demographic factors. *Jurnal Siasat Bisnis*, 183-196.

Tabassum, S., Soomro, I. A., Ahmed, S., Alwi, S. K. K., & Siddiqui, I. H. (2021). Behavioral Factors Affecting Investment Decision-Making Behavior in a Moderating Role of Financial Literacy: A Case Study of Local Investors of Pakistan Stock Market. *International Journal of Management (IJM)*, *12*(2), 321-354.

Ullah, S., Elahi, M. A., Ullah, A., Pinglu, C., & Subhani, B. H. (2020). Behavioural Biases in Investment Decision Making and Moderating Role of Investor's Type. *Intellectual Economics*, *14*(2), 87-105.

Zafar, S., Ashraf, S., & Raza, T. (2024). THE INVESTMENT DECISION-MAKING: UNDERSTANDING OVERCONFIDENCE, HERDING AND RISK AVERSION AMONG INDIVIDUAL INVESTORS. *JOURNAL OF SOCIAL SCIENCES DEVELOPMENT*, *3*(1), 32-44.

Zhang, M., Nazir, M. S., Farooqi, R., & Ishfaq, M. (2022). Moderating role of information asymmetry between cognitive biases and investment decisions: A Mediating effect of risk perception. *Frontiers in psychology*, *13*, 828956.