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A Study of Overconfidence Bias on Investment Decision with Respect to Behavioral Finance

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ABSTRACT:

This study explores how overconfidence bias influences investment decisions within the framework of behavioral finance. Overconfidence often leads investors to trade excessively, misjudge market risks, and overestimate their decision-making capabilities. By employing statistical tools such as ANOVA and regression analysis, this research explores the influence of demographic factors on overconfidence and its impact on trading frequency, risk tolerance, and portfolio performance. Findings reveal significant relationships and highlight the need for mitigation strategies. This research enhances the understanding of cognitive biases in financial markets.

Keywords: Overconfidence Bias, Investment Decisions, Behavioral Finance, Risk Tolerance, Cognitive Biases

INTRODUCTION:

This research seeks to enhance the existing body of literature by building upon the research conducted by Kumar and Goyal (2015), focusing on how overconfidence bias impacts investor decisions, with particular emphasis on the mediating role of risk tolerance in the context of the Indian Stock Exchange. Overconfidence bias has become a critical area of interest due to its significant impact on investment behavior.

Behavioral finance explores the psychological factors that shape financial decision-making, often highlighting the irrational tendencies present among investors. Instead of strictly following rational decision-making models, many investors are susceptible to various biases, including overconfidence, which impacts their ability to make logical judgments

Bounded rationality causes individuals to rely on intuition and emotions rather than gathering and thoroughly analyzing data for decision-making. Numerous studies have documented irrational investor behaviors, such as frequent trading, buying stocks without evaluating their intrinsic value, basing decisions on past performance, following market trends, and holding onto losing stocks while selling winning ones (Kahneman & Tversky, 1979). According to Markowitz (1952), rational investors are expected to prefer lower risks for a given level of return; however, real-world behaviors often deviate from this theoretical assumption.

This study focuses on behavioral finance by closely examining the behaviors of individual investors. It suggests that those susceptible to overconfidence bias may also exhibit other behavioral biases, with risk tolerance serving as a mediating factor. Overconfidence often leads to irrational decision-making, which Shefrin (2007) describes as a tendency towards systematic errors. This research examines how risk tolerance mediates the relationship between overconfidence bias and investment behavior. Furthermore, it classifies overconfidence bias in investors based on the Big Five personality traits model, encompassing openness, conscientiousness, extraversion, agreeableness, and neuroticism.

REVIEW OF LITERATURE:

Investment Decisions

Investment decisions in daily life are influenced by various factors, including habits, emotions, reasoning, and social interactions. Research in behavioral finance questions the validity of traditional financial theories, such as the efficient market hypothesis, portfolio theory, and the risk-return trade-off. The seminal work by Franco Modigliani and Merton Miller, which assumed that individuals act rationally to maximize utility, has been questioned due to inconsistent empirical evidence (De Bondt, Mayoral, & Vallelado, 2013). Traditional finance models are grounded in the assumption of rational decision-making, suggesting that investors update their beliefs based on available data and make decisions aligned with

subjective expected utility theory. The efficient market hypothesis posits that irrational behaviors among investors may cause price distortions, which skilled traders can leverage through arbitrage opportunities. However, intuition and biases such as overconfidence significantly influence financial decisions (De Bondt et al., 2013).

Investor profiles lead to diverse investment behaviors. Pompian and Longo (2004) emphasized the importance of client profiling, as individual investors exhibit unique behaviors. They suggested tailoring investment policy statements to reflect each investor's profile to manage overconfidence bias effectively. In 2008, Pompian categorized investors as either passive (gaining wealth through inheritance) or active (building wealth through risk-taking). Therefore, understanding investor types is crucial for studying investment decisions. Harikanth and Pragathi (2012) highlighted that an investor's type influences their decision-making, while Yates, Lee, and Bush (1997) pointed out that behavioral biases are increasingly recognized by psychologists and social scientists in investment contexts, with variations observed among different groups.

Investor preferences in stock selection can vary, with many choosing stocks based on interest and past performance, regardless of whether it was positive or negative (Barber & Odean, 1999). Individual investors find selling decisions relatively straightforward, focusing solely on their holdings, whereas buying decisions can be more complex, considering multiple factors related to stock selection (Barberis & Thaler, 2003).

Overconfidence Bias

The globalization of financial markets, coupled with increasing complexity and volatility, has significantly reshaped the financial sector (Shepherd, Williams, & Patzelt, 2015). Behavioral finance, rooted in psychological theory, acknowledges that market participants' characteristics and the structure of available information greatly impact investment outcomes (Benjamin, Brown, & Shapiro, 2013). Behavioral biases often impair rational decision-making, diverting attention from logical considerations. Barberis and Thaler (2003) emphasized that behavioral finance helps improve investor decisions by minimizing the impact of biases.

Overconfidence is a common trait among financial market participants, manifesting in various forms, such as the overestimation of investment returns. Barber and Odean (2001) suggested that frequent trading often results from overconfidence, as investors gain more experience and confidence with each trade, leading to unrealistic forecasts. This bias affects both individual and corporate investment decision-making. Miller, Spengler, and Spengler (2015) described overconfidence as individuals' perception of their abilities and the limits of their knowledge.

People often overestimate their skills, resulting in impulsive decisions. Overconfident investors may believe they possess superior knowledge, dismissing crucial factors and ignoring advice that could be beneficial. Studies indicate that overconfident investors are more likely to invest in stocks and hold risky assets, believing their insights and market judgments to be accurate (Prosad, Kapoor, & Sengupta, 2012). As such, overconfidence significantly influences investor behavior, leading them to overestimate their knowledge, underestimate risks, and overstate their ability to control outcomes.

The Role of Risk Tolerance as a Mediator

Risk tolerance is a critical component of financial management and has received considerable attention in developed nations like the United States and Australia (Malmendier & Tate, 2005). However, studies on risk tolerance and individual investor behavior are relatively scarce in emerging markets such as Japan, China, Malaysia, Korea, and Pakistan, creating a gap in the existing literature. This research aims to address this gap by examining risk tolerance as a mediating factor in investment behavior. Assessing risk tolerance continues to be a growing and intriguing field within behavioral finance, as investment decisions are often aligned with an investor’s utility function.

While some investors are willing to accept risks to pursue potential gains, others prioritize their capacity to endure losses and their willingness to take on risk. Investors with a higher risk tolerance generally adopt a more aggressive approach, focusing mainly on potential rewards while acknowledging the possibility of losses (Kudryavtsev et al., 2013). On the other hand, risk-averse investors tend to favor less risky options, seeking stable yet lower returns, in line with the principle of "more risk, more return." Consequently, risk tolerance plays a crucial role in shaping and influencing investment decisions and behavior.

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Hypotheses:

H1: Overconfidence Bias significantly influences investment decisions.

H2: Overconfidence Bias has a significant impact on Risk Tolerance.

H3: Risk Tolerance significantly affects investment decisions.

H4: Risk Tolerance mediates the relationship between Overconfidence Bias and investment decisions.

RESEARCH FRAMEWORK:

Following a thorough analysis of the existing literature and the identification of the research gap highlighted by this study, the conceptual framework for this research is outlined as follows:

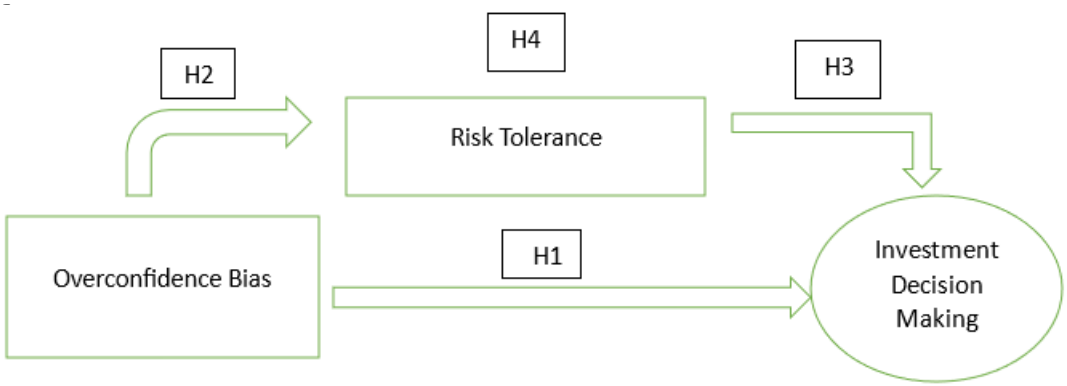

Figure 01: Conceptual Framework

RESEARCH METHODOLOGY:

In this study, primary data was collected through a survey questionnaire, adapted from various research papers authored at different times. The questionnaire included statements tailored to the target population, with participants responding to 19 questions designed to measure relevant variables. Data collection involved face-to-face interactions with investors at the Lahore and Islamabad stock exchanges who were available to participate. The survey consisted of 19 closed-ended questions to assess the variables under consideration.

The survey achieved a Cronbach's alpha value of 0.911, reflecting a strong level of internal consistency. Additionally, item-specific Cronbach's alpha values were within acceptable ranges, further validating the reliability of the measured variables. Following data collection, data analysis was conducted to address the research objectives. Of the 400 questionnaires distributed, 283 were returned, yielding a 70% response rate.

The data analysis process included three primary phases: data screening, simple and multiple regression analyses, and mediation analysis, all carried out using SPSS version 23.0. The initial data screening phase ensured that statistical assumptions were met. Regression analyses were then used to examine the influence of overconfidence bias on investment decisions, while multiple regression analyses assessed the combined effects of the independent variables on the dependent variable. Lastly, mediation analysis was conducted to uncover the underlying mechanisms and relationships between the variables.

RESULT & DISCUSSION:

Demographic Description

The demographic breakdown of the study participants is provided below:

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	300	80%
	Female	75	20%
Age Group	18-30 years	150	40%
	31-45 years	135	36%
	46+ years	90	24%
Investment Experience	1-5 years	180	48%
	6-10 years	100	27%
	11+ years	95	25%

Interpretation:
The sample is predominantly composed of male investors (80%) and younger participants aged 18-30 years (40%), which aligns with common trends observed in stock market participation. Nearly 48% of respondents have 1-5 years of investment experience, indicating a relatively less experienced group that may be more prone to overconfidence bias.

Regression Analysis of Overconfidence Bias and Investment Decisions

Regression

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	0.601	0.361	0.357	0.532

ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	69.241	1	69.241	158.578	< 0.001
Residual	122.695	281	0.437		
Total	191.936	282			

Coefficients Table

Predictor	B (Unstandardized)	SE	Beta (Standardized)	t	Sig.
Constant	1.665	0.174		9.545	< 0.001
Overconfidence Bias	0.618	0.049	0.601	12.593	< 0.001

Interpretation:
There is a positive association between overconfidence bias and investment decisions ($\beta = 0.601$, $p < 0.001$). This suggests that increased levels of overconfidence lead to more frequent and potentially riskier investment choices. The model accounts for 36.1% of the variance in investment decisions, highlighting the significant impact of overconfidence on investor behavior.

5.3 Regression Analysis of Risk Tolerance and Its Influence on Investment Decisions

Regression

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
1	0.743	0.550	0.548	0.306

ANOVA

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	105.887	1	105.887	345.785	< 0.001
Residual	86.049	281	0.306		
Total	191.936	282			

Coefficients Table

Predictor	B (Unstandardized)	SE	Beta (Standardized)	t	Sig.
Constant	1.143	0.147		7.784	< 0.001
Risk Tolerance	0.731	0.039	0.743	18.595	< 0.001

Interpretation:
Risk tolerance is a strong predictor of investment decisions ($\beta = 0.743$, $p < 0.001$), accounting for 55% of the variance. This suggests that individuals with higher risk tolerance are more likely to make bold investment choices. The strength of the relationship indicates that risk tolerance is a crucial factor in investment behavior.

Regression Analysis of Risk Tolerance as a Mediating Factor Between Overconfidence Bias and Investment Decisions

Step 1: Direct Relationship (Without Mediator)

Predictor	B (Unstandardized)	SE	Beta (Standardized)	t	Sig.
Constant	1.665	0.174		9.545	< 0.001
Overconfidence Bias	0.618	0.049	0.601	12.593	< 0.001

Step 2: Relationship with Mediator (Risk Tolerance Included)

Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate
2	0.752	0.566	0.562	0.299

ANOVA Table

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	108.704	4	27.176	90.770	< 0.001
Residual	83.232	278	0.299		
Total	191.936	282			

Coefficients Table

Predictor	B (Unstandardized)	SE	Beta (Standardized)	t	Sig.
Constant	0.881	0.180		4.904	< 0.001
Overconfidence Bias	0.147	0.063	0.143	2.344	0.020
Risk Tolerance	0.623	0.041	0.631	15.195	< 0.001

Interpretation:

Introducing risk tolerance as a mediator reduces the direct effect of overconfidence bias on investment decisions, though it remains significant ($\beta = 0.143$, $p = 0.020$). This indicates partial mediation, demonstrating that risk tolerance plays a key role in clarifying the relationship between overconfidence bias and investment decisions. Additionally, the adjusted R^2 value increases, showing that including the mediator enables the model to explain a greater proportion of the variance.

The analyses confirm that overconfidence bias directly and indirectly influences investment decisions, with risk tolerance serving as a significant mediator. This suggests that strategies to mitigate overconfidence should focus on enhancing investors' risk awareness and providing tools to better assess their confidence levels.

CONCLUSION & RECOMMENDATIONS

This dissertation examines how overconfidence bias impacts investment decisions, with particular attention to the mediating role of risk tolerance. Data analysis was conducted using SPSS software (Version 23.0). After a thorough review of existing literature and the identification of key variable dimensions, seven hypotheses were formulated and tested. The analysis revealed significant relationships among all variables, leading to the acceptance of all proposed hypotheses.

Hypothesis H1 explores the impact of overconfidence bias on investment decisions, positing that overconfidence has a substantial effect on these decisions. The data supported this hypothesis, with a p-value of 0.000, demonstrating a highly significant influence of overconfidence on investment choices. These results are consistent with prior research in this domain.

Hypothesis H2 investigates the link between investors' behavioral traits and their risk tolerance, suggesting that these traits have a significant effect on risk tolerance levels. This relationship was confirmed by the analysis, yielding a p-value of 0.000, well within acceptable significance levels. Similarly, Hypothesis H3 posits that risk tolerance has a significant effect on investment decisions. The data corroborated this hypothesis, with both hypotheses showing p-values of 0.000, indicating strong connections between risk tolerance, overconfidence bias, and investment choices.

Hypothesis H4 focuses on the mediating role of risk tolerance in the relationship between overconfidence bias and investment decisions. The Four Path Theory was used to assess this mediation effect. The results confirmed that risk tolerance mediates the relationship between overconfidence bias and investment decisions. The findings suggest that overconfident investors are more prone to making flawed decisions. Even with high levels of risk tolerance, their overconfidence can result in suboptimal investment outcomes.

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