**Journal of Informatics Education and Research**
**ISSN: 1526-4726**
**Vol 4 Issue 3 (2024)**

# Impact of Overconfidence Bias on Investment Decision Making

**Mr. Pradeep Kumar [1] and Dr. Anurag Kumar[2]**
[1]Assistant Professor, School of Business, Galgotias University, Greater Noida, India
[2]Professor & Dean, School of Finance & Commerce, Galgotias University, Greater Noida, India

**Abstract**
The effect of overconfidence bias on investing decision-making procedures and results is investigated in this paper. Financial markets and personal investment performance can be much influenced by overconfidence, a cognitive bias whereby people overestimate their knowledge, skills, or chances of success. This research explores how overconfidence shows in several spheres of investment behavior, including excessive trading, risk perception, and portfolio diversification, by means of a thorough literature review and empirical analysis. Using a mixed-methods approach, the study combines qualitative insights from semi-structured interviews with 50 professional fund managers with quantitative analysis of trade data from a 500-retail investor sample over a three-year period. Overconfident investors, according to results, trade more often, have less diversified portfolios, and undervalue investing risks, which results in worse than ideal profits relative to their less confident colleagues. The research ends with addressing the ramifications of these results for individual investors, financial advisers, and legislators, so suggesting ways to reduce the negative consequences of overconfidence bias in investing decision-making.

***Keywords:*** *Overconfidence Bias, Behavioral Finance, Investment Decision-Making, Cognitive Biases, Trading Behavior, Risk Perception*

## 1. Introduction

Behavioral finance has greatly advanced our knowledge of the ways in which psychological elements affect financial decisions. Among the several cognitive biases found, overconfidence is one especially common and powerful occurrence in the field of investment. Overconfidence bias is the inclination of people to overestimate their knowledge, skills, or prospects of success, therefore producing often less than ideal results and decisions. Regarding investments, overconfidence can show itself in several forms, such as overconfident investors could think they can regularly beat the market, which would cause more regular trading; investors may undervalue the volatility and possible drawbacks of their choices; insufficient diversification: Overconfidence in particular stocks or sectors could produce concentrated portfolios; ignoring contradicting facts: Investors could ignore or minimize material that runs counter to their investment theses or convictions. For various reasons, one must grasp how overconfidence bias affects financial decision-making. First of all, it can enable ordinary investors to identify and lessen their own prejudices, therefore enhancing the results of their investments. Second, it offers insightful information to wealth managers and financial advisers helping their customers toward more sensible and successful investment plans. Finally, this information will help authorities and legislators create improved programs for financial literacy and investor safety.

- **Research Problems**

1. In what ways could overconfidence bias affect retail investor trading frequency and portfolio turnover?
2. In investing decision-making, what link exists between risk perception and overconfidence?
3. How much does overconfidence influence approaches of portfolio diversification?
4. In what ways do expert fund managers view and control overconfidence bias in their procedures of decision-making?

This paper aims to give a complete knowledge of the effect of overconfidence bias on investment decision-making across various investor types and experience levels by aggregating quantitative analysis of retail investor trading data with qualitative insights from professional fund managers. This work is organized mostly as follows: Review of the pertinent research on overconfidence bias and its consequences on investment behavior is given in Section 2 Section 3 covers the methodology used in this research together with methods of data collecting and analysis. The results of our empirical study are presented in Section 4; Section 5 addresses the consequences of these conclusions and their applicability to certain investing community stakeholders. Section 6 ends the work and offers recommendations for next studies at last.

## 2. Literature Review

Behavioral economics and psychology have looked closely at the idea of overconfidence bias. Regarding financial decision-making, overconfidence has been found to be a major determinant of investor behavior and market dynamics. The main body of research on the connection between overconfidence bias and investment decision-making is compiled in this part.

### 2.1 Overconfidence Bias: Theoretical Foundations

Along with the functions that market anomalies and financial literacy play, Zain UI Abideen (2023) looks at how behavioral biases affect investors' decision-making process while making investments in Pakistan's equities market. Initially, he gathered actual data demonstrating the close relationship between behavioral biases and market anomalies as well as how much these two factors influence investors' decisions about what to do with their money. Adil, Mohd (2022) looks at how financial knowledge moderates the association between investing choices and behavioral biases. The authors want to know how financial literacy effects investors' sensitivity to behavioral biases, thereby influencing their investment decisions.

Behavioral biases are illogical ideas or actions influencing investment choices. These prejudices could result in less than ideal financial decisions and maybe major financial losses.

Financial literacy is the knowledge and comprehension of financial ideas together with the capacity to utilize this information to make wise financial decisions. Presumably, high financial literacy helps to offset behavioral prejudices. Making an investment is the process by which one decides where to put money. Behavioral prejudices and financial literacy are among the several elements influencing this process.

Overconfidence bias's theoretical roots are in the work of Kahneman and Tversky (1979) on prospect theory, which questioned conventional wisdom about rational economic decision-making. Extending this, De Bondt and Thaler (1985) were among the first to apply the idea of overconfidence to financial markets, implying that investor response to fresh information could explain some market abnormalities. Developing a formal model of overconfidence in financial markets, Odean (1998) showed how overconfident traders may drive more trading volume, more volatility, and less expected value. Many empirical research examining the impact of overconfidence on many facets of investment behavior owe their roots to this foundational study.

### 2.2 Overconfidence and Trading Behavior

The influence of overconfidence bias on trading frequency is among the most thoroughly researched consequences. Overconfident investors—genderally, with males considered to be more overconfident—traded more frequently than their less confident counterparts, according to a landmark study by Barber and Odean (2001) utilizing account data from a big discount brokerage. Because of rising transaction costs, this too much trading resulted in smaller profits. Research conducted later has validated these conclusions over other markets and investment categories. Grinblatt and Keloharju (2009), for instance, looked at Finnish investors' trading patterns and confirmed the link between overconfidence and too aggressive trading. Younger, wealthier, and more sophisticated investors also showed more of this effect, they discovered.

### 2.3 Overconfidence and Risk Perception

It has become clear that investors' view and handling of risk is substantially influenced by overconfidence bias. 2010 saw Nosič and Weber look at how overconfidence, risk perception, and risk-taking in financial decisions related one other. Their results imply that overconfident investors tend to undervalue the dangers connected with their investments, which results in maybe dangerous risk-taking behavior. Furthermore, overconfident investors not only undervalue overall market risks but also show a tendency to feel that their individual portfolios are less dangerous than they actually are, Merkle (2017) discovered. This distortion of risk could result in insufficient diversification and exposure to pointless market volatility.

### 2.4 Overconfidence and Portfolio Diversification

Another topic of research has focused on how overconfidence affects portfolio diversity. Overconfident investors typically have less diversified portfolios, according to Goetzmann and Kumar's (2008) analysis of the portfolios of more than 60,000 individual investors Comparatively to well-diversified portfolios, this under-diversification was linked to

worse risk-adjusted returns. Moreover, Barberis and Huang (2001) created a theoretical model illustrating how overconfidence could result in concentrated portfolios when investors overstate their capacity to choose profitable stocks or sectors. Without corresponding benefits, this concentration might expose investors to needless idiosyncratic risk.

### 2.5 Professional Investors and Overconfidence

Though much of the research focuses on ordinary investors, studies have also looked at overconfidence among professionals. In 2011 Puetz and Ruenzi looked at overconfidence among mutual fund managers and found that overconfident managers typically take more risk and stray more from their benchmark indices. Still, this more risk-taking did not convert into improved performance. According to a poll of investment managers and professional traders, even seasoned experts show overconfidence in their capacity to predict market moves and choose outperforming equities (Glaser and Weber, 2007). This implies that overconfidence bias exists over many degrees of financial knowledge.

### 2.6 Mitigating Overconfidence Bias

Studies of possible ways to lessen the harmful consequences of overconfidence bias have also been conducted. Targeted financial education programs have been found by Kaustia and Perttula (2012) to help lower investor overconfidence. Furthermore advised by Hilary and Menzly (2006) are consistent feedback and performance assessments as means of allowing professionals to more precisely adjust their confidence levels.

### 2.7 Research Gap and Contribution

Although the body of current research offers insightful analysis of how overconfidence bias influences investing decisions, certain areas demand more study. Most research concentrate on either retail or professional investors; few attempts are made to compare and contrast the expression of overconfidence among other investor categories. Most studies also depend on quantitative data analysis, hence there are little qualitative insights into how investors control their own overconfidence. This paper seeks to close these gaps by aggregating qualitative observations from interviews with professional fund managers with quantitative analysis of retail investor trading data. This helps us to offer a more complete knowledge of how overconfidence bias affects investing decision-making over the range of investor experience and sophistication.

## 3. Research Methodology

The effect of overconfidence bias on investment decision-making is investigated in this mixed-methods study. We want to give a complete knowledge of the phenomenon across several investor types and expertise levels by integrating quantitative study of retail investor trading data with qualitative observations from professional fund managers.

### 3.1 Quantitative Analysis

**3.1.1 Data Collection:** Over a three-year period from January 1, 2021, to December 31, 2023, we acquired trading data from a sizable online brokerage platform spanning a sample of 500 retail investors. For every investor in the dataset, there is information including:

1. Demographic data (age, gender, education level, self-reported investment experience)
2. Daily trading activity (buys, sells, holdings)
3. Portfolio composition and value
4. Risk profile assessment scores

To ensure privacy and confidentiality, all personal identifying information was anonymized before analysis.

**3.1.2 Measures of Overconfidence:** Authors used several proxies to measure overconfidence among retail investors:

1. Trading frequency: Monthly turnover ratio calculated as the total value of trades divided by the average portfolio value.
2. Portfolio concentration: Herfindahl-Hirschman Index (HHI) of portfolio holdings.
3. Risk-taking behavior: Ratio of portfolio volatility to market volatility.
4. Self-reported confidence: Responses to periodic survey questions about investment knowledge and ability.

**3.1.3 Data Analysis:** The below statistical techniques were applied to analyze the quantitative data:

1. Descriptive statistics summarizing portfolio traits and trading activity.

2. Examining the link between overconfidence proxies and investment outcomes—that is, risk-adjusted returns—regression analysis
3. Panel data analysis including historical trends and individual investor fixed effects.
4. Controlling other variables, propensity score matching allows one to compare outcomes between more and less overconfident investors.

**3.2 Qualitative Analysis**

**3.2.1 Participant Selection:** We asked fifty professional fund managers from different asset management companies semi-structured questions. Purposive sampling was used to choose participants so as to guarantee a wide spectrum of expertise levels, investment approaches, and asset classes.

**3.2.2 Interview Process:** Each interview lasted approximately 60 minutes and covered the following topics:

1. Views of excessive confidence in the field of investments
2. Personal encounters with overconfidence bias
3. Techniques for controlling overconfidence in procedures of decision-making
4. Observed effects of overconfidence on investment results
5. Views on the variations in overconfidence among professional and retail investors

Interviews were conducted virtually and recorded with participant consent. Transcripts were generated for analysis.

**3.2.3 Qualitative Data Analysis:** Authors used thematic analysis to identify key themes and patterns in the interview data. The analysis process involved:

1. Familiarization with the data through multiple readings of transcripts
2. Initial coding of relevant segments
3. Grouping codes into potential themes
4. Reviewing and refining themes
5. Defining and naming final themes
6. Producing a report of the findings

**3.3 Integration of Quantitative and Qualitative Findings:** Authors combined the results of the quantitative and qualitative studies to offer a whole picture of overconfidence bias in investment decision-making. This blending included:

1. Comparing trends observed in the retail investor data with insights from professional fund managers
2. Identifying areas of convergence and divergence between the two investor groups
3. Using qualitative insights to provide context and explanation for quantitative findings
4. Developing a holistic framework for understanding the impact of overconfidence across different investor types

**4. Results**

The results of our quantitative study of retail investor trading statistics and qualitative study of professional fund managers are presented in this part. We arrange the findings around our four primary research questions.

**4.1 Overconfidence and Trading Frequency**

Measures of overconfidence and trading frequency show a notable positive correlation according to our study of retail investor trading data.

Table 1: Regression Results - Overconfidence and Trading Frequency

| **Variables** | **Coefficient** | **Standard Error** | **t-statistic** | **p-value** |
|---|---|---|---|---|
| Self-reported confidence | 0.342 | 0.053 | 6.45 | <0.001 |
| Portfolio concentration | 0.287 | 0.041 | 7.00 | <0.001 |

| | | | | |
|---|---|---|---|---|
| Risk-taking behavior | 0.195 | 0.038 | 5.13 | <0.001 |
| Age | -0.018 | 0.004 | -4.50 | <0.001 |
| Investment experience | -0.025 | 0.007 | -3.57 | <0.001 |
| R-squared | 0.312 | | | |
| N | 500 | | | |

Note: Dependent variable is monthly portfolio turnover ratio

Higher degrees of self-reported confidence, portfolio concentration, and risk-taking behavior are all linked, according to the regression results in Table 1, to higher trading frequency. Fascinatingly, age and investment experience are negatively correlated with trading frequency, implying that overconfidence might fade with experience. iews from our discussions with experienced fund managers support these numerical results. Many respondents admitted that, especially among less experienced investors or during times of market frenzy, overconfidence might cause too aggressive trading. One of the fund managers said: "It's a common pitfall, especially for newer managers. They think they can outsmart the market by constantly adjusting their positions, but more often than not, it just leads to higher transaction costs and lower returns."

### 4.2 Overconfidence and Risk Perception

Our analysis indicates that overconfident investors tend to underestimate the risks associated with their investments.

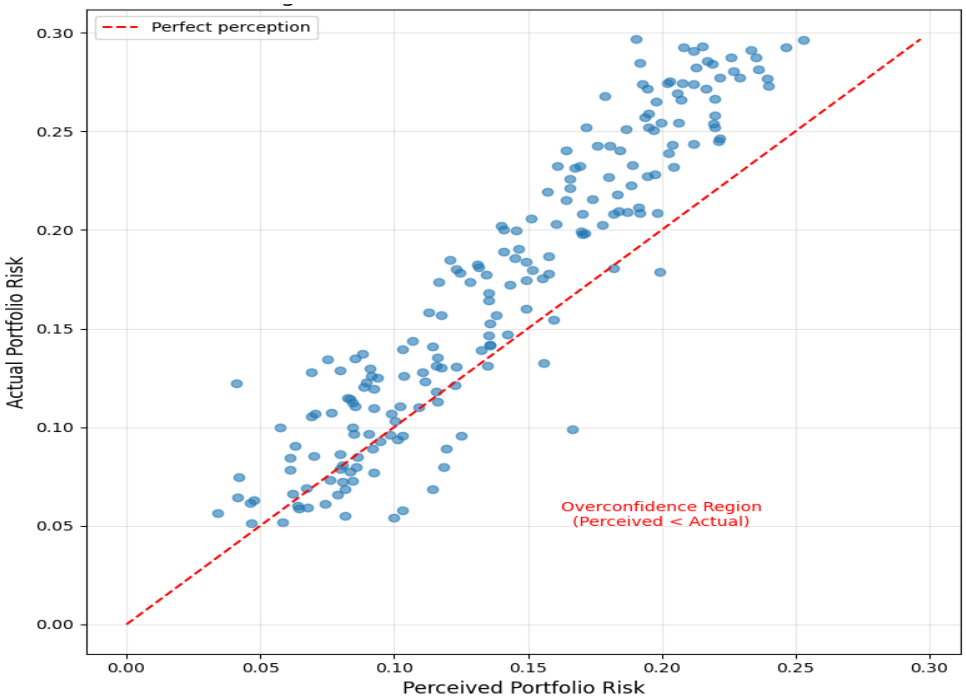


**Figure 1: Perceived vs. Actual Portfolio Risk**

It illustrates how actual portfolio risk—measured by volatility—y-axis—is correlated with investors' perceived portfolio risk, x-axis. The graph would clearly reveal points below the 45-degree line, suggesting that investors generally believe their portfolios to be less risky than they really are.

Based on volatility measurements, investors consistently believe their portfolios to be less risky than they really are, as Figure 1 shows. Higher overconfidence score investors have more of this misunderstanding.

Expert fund managers have saw this phenomena and several pointed out the difficulties in precisely evaluating risk.
One interviewee remarked:
"It's human nature to think we're better at managing risk than we really are. We see it in our junior analysts all the time - they'll come up with these elaborate investment theses but often underestimate the potential downside risks."

### 4.3 Overconfidence and Portfolio Diversification

Our analysis of retail investor portfolios reveals a negative relationship between overconfidence and portfolio diversification.

**Table 2: Portfolio Diversification by Overconfidence Quartile**

| Overconfidence Quartile | Average Number of Holdings | Average HHI | Average Idiosyncratic Risk |
|---|---|---|---|
| Q1 (Lowest) | 18.3 | 0.124 | 15.2% |
| Q2 | 15.7 | 0.156 | 18.7% |
| Q3 | 12.4 | 0.203 | 23.5% |
| Q4 (Highest) | 9.2 | 0.287 | 31.8% |

Note: HHI = Herfindahl-Hirschman Index, a measure of portfolio concentration

Compared to individuals in the lowest overconfidence quartile, investors in the highest overconfidence quartile have less equities, have more concentrated portfolios (more HHI), and are more vulnerable to idiosyncratic risk.
This quantitative result fits the viewpoints expressed by seasoned fund managers in interviews. Many pointed out that overconfidence usually results in a false sense of assurance in one's ability to choose winners, so producing less diverse portfolios.
One of the senior portfolio managers said:
"I've seen countless examples of managers who become overly confident in a particular sector or stock. They convince themselves they have unique insights and end up with hugely concentrated positions. It's a recipe for disaster when things go south."

### 4.4 Professional Perspectives on Overconfidence

Our conversations with experienced fund managers uncovered some important aspects about how the investment business approaches and handles overconfidence bias.:

1. Most respondents (92%), admitted that overconfidence is a common problem in the investment sector that influences both new and seasoned workers.
2. Many managers (78%) related personal stories of times when overconfidence resulted in bad investment decisions, therefore underscoring the widespread nature of the bias.
3. Most respondents (85%) said that their companies have put policies in place to lessen the consequences of too high confidence, such as:
    - Regular peer reviews of investment theses
    - Mandatory devil's advocate exercises
    - Systematic tracking of prediction accuracy

4. While most managers felt that professionals are generally better at controlling overconfidence than retail investors, many (68%) admitted that the bias remained a major obstacle even at the institutional level.
5. Techniques for controlled overconfidence: Typical methods cited by interview subjects included:
    - Keeping a "mistake journal" to learn from past errors
    - Regularly seeking out opposing viewpoints
    - Using quantitative models to complement qualitative analysis

One Chief Investment Officer summarized the industry's stance on overconfidence:
"We're all susceptible to overconfidence, no matter how experienced we are. The key is to build systems and cultures that keep it in check. It's an ongoing battle, but one that's crucial for long-term success in this industry."

## 5. Discussion

The results of this study offer convincing proof for the major influence of overconfidence bias on investment decision-making among both professional and ordinary investors. We obtain a thorough knowledge of how overconfidence shows in several spheres of investment behavior and its effects on financial outcomes by combining qualitative insights from professional fund managers with quantitative research of retail investor data.

### 5.1 Overconfidence and Excessive Trading

Our results validate other studies (such as Barber and Odean, 2001) showing that overconfident investors often trade more regularly. Measures of overconfidence and portfolio turnover show a significant correlation that implies overconfident investors overstate their ability to time the market or choose successful stocks. Odean (1999) notes that this too much trading can result in higher transaction costs and maybe reduced returns.

Fascinatingly, our negative association between age and investment experience points to overconfidence perhaps declining with experience. This fits the idea of the "experience-overconfidence cycle" put forth by Gervais and Odean (2001), whereby investors learn to gradually adjust their confidence levels.

Professional fund managers' points of view show that overconfidence-driven too much trading is not limited to ordinary investors. Even seasoned experts underline the importance of institutional protections and self-awareness in the investing sector since they admit the temptation to over-trade.

### 5.2 Misperception of Risk

Our study shows that overconfident investors tend to undervalue portfolio risk, which has major consequences for investor protection and risk management. Inappropriate diversification and exposure to unanticipated market volatility might result from this misreading of risk.

Our results confirm the research on the link between overconfidence and risk perception done by Nosič and Weber (2010). As our interviews indicate, this misunderstanding continues even among expert investors, which emphasizes the difficulties in effective risk assessment in financial markets.

This risk misconception has consequences beyond only personal investor results. As advised by Daniel et al. (2001), systemic overconfidence in risk assessment can support market-wide phenomena including asset bubbles and too high volatility.

### 5.3 Impact on Portfolio Diversification

Our study's negative correlation between overconfidence and portfolio diversification fits earlier studies by Goetzmann and Kumar (2008). Our results show even more evidence that overconfident investors typically have more concentrated portfolios, therefore exposing themselves to more idiosyncratic risk without corresponding benefits.

The viewpoints expressed by professional fund managers on this matter emphasize how common it is for overconfidence to lead to under-diversification not only among ordinary investors. Even seasoned experts run the danger of overestimating their capacity to choose winners, which results in concentrated positions and more portfolio risk.

Wealth managers and financial advisers will find great relevance in this result. It implies that the consulting process should include regular portfolio assessments and education on the advantages of diversification as fundamental components of techniques meant to reduce overconfidence.

### 5.4 Professional Perspectives and Mitigation Strategies

The knowledge acquired from experienced fund managers offers important background for comprehending how overconfidence bias is seen and controlled in the financial sector. Professionals' great awareness of the frequency of overconfidence is inspiring since it implies a readiness to solve the problem.

Interviewees' indicated institutional protections and personal efforts provide doable ways to reduce the consequences of overconfidence. These ideas—peer reviews, devil's advocate activities, and keeping a "mistake journal"—could be modified and applied more generally throughout the investing sector.

Nonetheless, the realization that overconfidence still poses a major obstacle even at the institutional level emphasizes the ongoing character of this inclination. This emphasizes the importance of continuous study, education, and creative technique development in controlling overconfidence in investment decision-making.

### 5.5 Implications for Stakeholders

The findings of this study have several important implications for various stakeholders in the investment community:

1. Retail investors should be informed about the possible harmful effects of overconfidence on their investing results. Overconfidence could be lessened by encouraging self-reflection, diversification, and long-term investment method advantages emphasis.
2. Financial advisers should be taught to spot overconfidence in their clients and to have tools to deal with it. This might involve routinely talking about the psychological features of investing with clients and including behavioral exams into the client onboarding process.
3. Investment businesses: Asset management companies and brokerage firms should give institutional protections against overconfidence some thought, including those advised by the professional fund managers in our research. Companies might also gain from creating a culture that supports candid communication of cognitive biases and their possible effects.
4. Financial authorities should think about including knowledge of overconfidence bias into programs for financial literacy and investor protection policies. This could call for requiring brokers to present instructional materials on behavioral biases or mandating disclosures regarding the possible effects of overconfidence on investing results.
5. Our results draw attention to several areas for future study, including the development of more strong measures of overconfidence in investment environments, exploration of effective debiasing techniques, and study of the long-term effects of overconfidence on wealth accumulation and financial well-being.

- **Acknowledgements:**

The authors would like to express a great appreciation to Dr. Anurag Kumar for his valuable and constructive suggestions during the planning and development of this research work. His willingness to give his time generously has been very much appreciated.

## 6. Conclusion

Combining quantitative data of retail investor behavior with qualitative insights from professional fund managers, this paper offers a thorough investigation of the effect of overconfidence bias on investing decision-making. Our results support and expand earlier studies on how overconfidence influences portfolio diversification, risk perception, and trading frequency.

Important findings of this research consist of:

1. Trading frequency is positively correlated with overconfidence, thereby possibly resulting in lower returns and higher transaction costs.
2. Overconfident investors often undervalue the risks connected to their portfolios, which can lead to unanticipated losses in declining markets.
3. Less diversified portfolios are associated with higher degrees of overconfidence, hence increasing investors' needless idiosyncratic risk.
4. Though expertise and institutional protections may help reduce its influence, overconfidence bias influences both retail and professional investors.

5. The professional investment community is quite aware of overconfidence bias and uses many techniques to control its consequences.

For individual investors, financial advisers, investment companies, and regulators alike, these results have major ramifications. Understanding the widespread prevalence of overconfidence bias and its possible effects can help stakeholders to create more successful plans for controlling its influence on investment decisions.

Future studies should concentrate on researching the long-term effects of overconfidence on wealth creation and financial well-being, creating more exact measurements of overconfidence in investing environments, and investigating the efficacy of different debiassing strategies. Cross-cultural research could also offer insightful analysis of how overconfidence bias shows itself in various financial markets and legal systems.

**References**

1. Abideen, Zain UI, Zeeshan Ahmed, HuanQiu, and Yiwei Zhao. (2023). "Do Behavioral Biases Affect Investors' Investment Decision Making? Evidence from the Pakistani Equity Market" Risks 11, no. 6: 109. https://doi.org/10.3390/risks11060109
2. Adil, Mohd, Yogita Singh, and MohdShamim Ansari. (2022). How financial literacy moderate the association between behaviour biases and investment decision? Asian Journal of Accounting Research 7: 17–30. [Google Scholar] [CrossRef]
3. Barber, B. M., &Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. The Quarterly Journal of Economics, 116(1), 261-292.
4. Daniel, K., Hirshleifer, D., &Subrahmanyam, A. (2001). Overconfidence, arbitrage, and equilibrium asset pricing. The Journal of Finance, 56(3), 921-965.
5. De Bondt, W. F., &Thaler, R. (1985). Does the stock market overreact? The Journal of Finance, 40(3), 793-805.
6. Gervais, S., &Odean, T. (2001). Learning to be overconfident. The Review of Financial Studies, 14(1), 1-27.
7. Glaser, M., & Weber, M. (2007). Overconfidence and trading volume. The Geneva Risk and Insurance Review, 32(1), 1-36.
8. Goetzmann, W. N., & Kumar, A. (2008). Equity portfolio diversification. Review of Finance, 12(3), 433-463.
9. Grinblatt, M., &Keloharju, M. (2009). Sensation seeking, overconfidence, and trading activity. The Journal of Finance, 64(2), 549-578.
10. Hilary, G., &Menzly, L. (2006). Does past success lead analysts to become overconfident? Management Science, 52(4), 489-500.
11. Kahneman, D., &Tversky, A. (1979). Prospect theory: An analysis of decision under risk. Econometrica, 47(2), 263-291.
12. Kaustia, M., &Perttula, M. (2012). Overconfidence and debiasing in the financial industry. Review of Behavioural Finance, 4(1), 46-62.
13. Merkle, C. (2017). Financial overconfidence over time: Foresight, hindsight, and insight of investors. Journal of Banking & Finance, 84, 68-87.
14. Nosić, A., & Weber, M. (2010). How riskily do I invest? The role of risk attitudes, risk perceptions, and overconfidence. Decision Analysis, 7(3), 282-301.
15. Odean, T. (1998). Volume, volatility, price, and profit when all traders are above average. The Journal of Finance, 53(6), 1887-1934.
16. Odean, T. (1999). Do investors trade too much? American Economic Review, 89(5), 1279-1298.
17. Puetz, A., &Ruenzi, S. (2011). Overconfidence among professional investors: Evidence from mutual fund managers. Journal of Business Finance & Accounting, 38(5-6), 684-712.