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Assessing the Impact of Heuristics and Personality Traits on Stock Investment Decisions

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ABSTRACT: *This research study investigates the impact of heuristics and personality traits on stock investment decisions among individual investors in Bengaluru. Behavioral finance and personality psychology provide the theoretical framework, focusing on how cognitive shortcuts (heuristics) and the Big Five Personality Traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) influence investor behavior. The study utilizes a structured questionnaire administered to a sample of 115 individual investors. Descriptive statistics were used to examine demographic profiles, personality traits, and heuristics, while factor analysis identified underlying components driving investment decisions. The results reveal that personality traits, particularly Conscientiousness and Extraversion, significantly influence stock investment decisions, as do heuristics like overconfidence, anchoring, and availability. Investors exhibiting high levels of conscientiousness tended to make more organized, long-term decisions, while extraverted individuals demonstrated a preference for social cues and potentially riskier investments. Heuristics such as overconfidence led to excessive risk-taking, as investors overestimated their ability to predict market movements. The study confirms that both personality traits and heuristics interact to shape investment strategies, offering practical insights for financial advisors and individual investors to tailor their approaches. These findings underscore the importance of integrating psychological factors into investment strategies, which can lead to more informed decision-making and improved financial outcomes. Future research should explore how these psychological factors interact with external market conditions to further understand investor behavior.*

KEY WORD: *Heuristics, Personality Traits, Stock Investment Decisions, Behavioral Finance, Overconfidence, Factor Analysis.*

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I. INTRODUCTION

Stock investment decisions are influenced by numerous factors, ranging from economic indicators to personal biases and psychological traits. The field of behavioral finance has gained significant traction as scholars investigate how non-rational elements, such as emotions and cognitive biases, impact financial decisions. Heuristics, which are mental shortcuts used by individuals to simplify decision-making processes, and personality traits, have been highlighted as significant influencers in investor behavior. These factors often shape risk-taking behavior, return expectations, and the overall approach to investing (A. Charles & Kasilingam, 2015). In modern finance, understanding these elements is crucial, as they can offer insights into market dynamics that purely economic or rational models might overlook.

The relevance of this study becomes even more pronounced given the increasing participation of individual investors in stock markets globally. As of 2021, retail investors accounted for approximately 23% of stock market trades in the United States, up from 15% in 2019 (Jiang, Peng, & Yan, 2020). The growing democratization of stock markets, facilitated by technological advancements and access to financial information, has increased the need to understand what drives individual decision-making in this complex domain. Behavioral biases, such as overconfidence and herding, have been identified as common pitfalls for investors, often leading to suboptimal financial decisions (Vuković & Pivac, 2023). Historically, traditional financial theories, such as the Efficient Market Hypothesis (EMH), assumed that investors act rationally, basing their decisions on available information to maximize returns. However, real-world evidence increasingly challenges this assumption, as investors frequently make decisions that deviate from rational behavior. Behavioral finance, introduced by Kahneman and Tversky (1979) with their Prospect Theory, acknowledges that psychological

factors such as fear, greed, and heuristics play a central role in financial decision-making. The study of heuristics, including overconfidence, anchoring, and representativeness, reveals how these mental shortcuts often lead investors to make errors in judgment (Chandra & Kumar, 2011).

Personality traits also play a critical role in shaping investor behavior. The Big Five Personality Traits—Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism—are commonly studied in the context of decision-making processes. Research shows that traits such as high Openness and Extraversion correlate with a higher propensity to take financial risks, while individuals scoring high in Neuroticism tend to be more risk-averse and exhibit pessimism towards market conditions (Lai, 2019). Studies further indicate that personality traits can influence an individual's susceptibility to behavioral biases such as overconfidence and herding (Yadav & Narayanan, 2021). In the context of stock investments, these psychological elements can significantly impact investment outcomes. For example, overconfidence, a common heuristic, can lead investors to overestimate their ability to predict market movements, resulting in excessive risk-taking and poor portfolio performance. Conversely, traits such as Conscientiousness and Agreeableness are associated with more cautious investment behaviors, potentially limiting exposure to high-risk assets but also reducing potential returns (Kamath et al., 2023). These findings suggest that both heuristics and personality traits are crucial determinants of investor behavior and should be accounted for in investment strategies.

This paper aims to assess the impact of heuristics and personality traits on stock investment decisions, particularly in the context of individual investors. While previous studies have explored these factors independently, there is a gap in literature that systematically investigates their combined influence on investment behavior. This study will focus on investors in Bengaluru city, examining how their personality traits and reliance on heuristics affect their stock investment decisions. By utilizing the Big Five Personality Traits model and key behavioral finance theories, this research will provide a comprehensive understanding of the psychological underpinnings of investment decisions.

The significance of this study lies in its potential to inform better investment practices. Financial advisors and individual investors alike can benefit from understanding how personality traits and heuristics influence decision-making. For instance, an investor who is aware of their tendency towards overconfidence may adopt strategies to mitigate the risks associated with this bias, such as diversifying their portfolio or seeking professional advice. Similarly, understanding how personality traits like Neuroticism or Extraversion influence risk tolerance can help investors tailor their investment strategies to align with their psychological profile (Conlin & Miettunen, 2017). Given the volatility of stock markets and the increasing participation of individual investors, especially in the post-pandemic era, the importance of behavioral insights cannot be overstated. In India, where stock market participation has surged by 36% in recent years, understanding the behavioral drivers of investment decisions is crucial for both market stability and individual financial well-being (Rathinasamy & Ramasubbian, 2020). The findings of this study will contribute to the growing body of knowledge in behavioral finance, offering new perspectives on how psychological traits and heuristics impact stock market outcomes.

II. LITERATURE REVIEW

The influence of heuristics and personality traits on stock investment decisions has been explored through various theoretical and empirical frameworks, emphasizing the role of psychological factors in shaping financial behavior. Over the years, research has increasingly focused on how investors use mental shortcuts and how their personality traits influence their investment decisions. A significant study by **A. Charles and Kasilingam (2015)** examined the role of heuristics in shaping investors' personalities, concluding that heuristics such as representativeness and overconfidence significantly influence decision-making in stock markets. Their research highlighted that emotional stability and cognitive capacities of investors are affected by these biases, which ultimately shape the personality traits exhibited during investment. Their findings suggest that investors relying on heuristics may show distinct behavioral patterns, which are predictive of their overall investment personality (Charles & Kasilingam, 2015). In a related study, **Cheng-Po Lai (2019)** explored the interaction between personality traits and stock investment decisions. This study found that personality traits, such as openness and agreeableness, significantly influence subjective norms, attitudes, and perceived behavioral control towards stock investment. Additionally, it was observed that neurotic individuals tend to have more negative attitudes towards stock investment. These findings align with earlier research by identifying that personality traits play a substantial role in shaping investors' attitudes and behaviors towards financial risk-taking (Lai, 2019).

The relationship between personality traits and stock investment decisions has also been extensively examined by **Sreedevi and Chitra (2012)**. They analyzed the Big Five Personality Traits and their influence on the choice of investment methods, finding that personality traits exert a more substantial influence than demographic variables. Investors with higher levels of openness and conscientiousness were more likely to engage in long-term, calculated investments, while those with higher neuroticism preferred short-term, lower-risk investments (Sreedevi & Chitra, 2012).

In their study on the Croatian stock market, **Marija Vuković and S. Pivac (2023)** demonstrated that overconfidence heuristic and elements of prospect theory, combined with personality traits, positively impact investment decisions, while herding behavior negatively affects them. Their research underscores the importance of understanding how psychological biases and personality traits interplay in the context of stock investment, influencing satisfaction with investment performance (Vuković & Pivac, 2023). **Yadav and Narayanan (2021)** expanded on this by studying the effects of personality traits on vulnerability to cognitive biases like overconfidence and herding. Their findings showed that extroverts and individuals with higher levels of openness and agreeableness are less likely to succumb to these biases during decision-making processes. This indicates that certain personality traits can serve as buffers against the adverse effects of common investment heuristics (Yadav & Narayanan, 2021).

Further research by **Jiang, Peng, and Yan (2020)** delved into the relationship between personality traits and investment decision-making. Their study revealed that the Big Five Personality Traits, particularly Neuroticism and Openness, have a significant impact on stock investment decisions. High Neuroticism was linked to pessimistic views about stock returns, while low Openness correlated with increased risk aversion, leading to more conservative investment portfolios (Jiang, Peng, & Yan, 2020). The work of **Kamath et al. (2023)** focused on how personality traits, such as Neuroticism and Extraversion, influence investor sentiment. Their study found that Neuroticism positively affects investor sentiment, leading to more cautious decisions, while Extraversion enhances long-term investment planning. Interestingly, their research did not find any significant mediating effect of investor sentiment between personality traits and stock investment decisions, suggesting a direct impact of personality on decision-making processes (Kamath et al., 2023). Lastly, **Rathinasamy and Ramasubbian (2020)** conducted research on the Big Five Personality Traits and their influence on investment decisions among investors in Coimbatore, India. Their findings align with previous research, indicating that personality traits like openness and conscientiousness significantly impact the propensity to engage in stock investments, with more open individuals exhibiting a higher tolerance for financial risk (Rathinasamy & Ramasubbian, 2020).

Through these various studies, it becomes evident that both heuristics and personality traits exert a strong influence on investment decisions. Heuristics like overconfidence and representativeness can lead to biased decision-making, while personality traits such as Neuroticism, Openness, and Extraversion influence risk tolerance and investment behaviors. This body of literature offers a rich understanding of how psychological factors shape investment decisions and highlights the need for more comprehensive models that integrate both behavioral biases and personality traits.

III. Research Gap

While substantial research has explored the independent effects of heuristics and personality traits on stock investment decisions, there is a clear gap in the literature concerning the combined influence of these factors, particularly in the context of individual investors in specific geographical areas, such as Bengaluru, India. Most studies focus on Western markets or offer broad generalizations without considering local market dynamics. This study aims to fill this gap by examining the dual impact of heuristics and personality traits on stock investment decisions within the unique socio-economic landscape of Bengaluru. Addressing this gap is significant as it can provide more targeted insights for financial advisors and investors operating in this region, leading to improved investment outcomes and strategies.

IV. Conceptual Framework

The conceptual framework for this study is built upon the theoretical foundations of behavioral finance and personality psychology. The central premise of this research is that stock investment decisions are influenced by both **heuristics** (mental shortcuts) and **personality traits**. These two factors interact to shape how individual investors perceive risk, evaluate market information, and make financial decisions.

4.1. Heuristics and Stock Investment Decisions

Heuristics are cognitive shortcuts or rules of thumb that individuals use to simplify decision-making in complex and uncertain situations. In the context of stock investments, investors often rely on heuristics to process large amounts of information quickly. However, these mental shortcuts can lead to **systematic biases** that result in suboptimal financial decisions. The key heuristics examined in this study include:

- **Overconfidence Heuristic**: Overconfident investors overestimate their ability to predict stock market movements, leading to excessive risk-taking and trading frequency (Chandra & Kumar, 2011).
- **Anchoring Heuristic**: Investors tend to rely heavily on initial information (such as past stock prices), even when more relevant data becomes available (A. Charles & Kasilingam, 2015).
- **Representativeness Heuristic**: Investors may assume that stocks exhibiting past high performance will continue to perform well, leading to biased decisions based on superficial similarities.

- **Availability Heuristic**: Investors often make decisions based on easily available information, such as news headlines, which may not represent the full complexity of the market (Vuković & Pivac, 2023).
- **Herding Behavior**: Investors sometimes follow the actions of others, buying or selling stocks based on the behavior of the market crowd rather than individual research (Yadav & Narayanan, 2021).

These heuristics can distort rational investment decision-making and contribute to behavioral biases that undermine financial outcomes.

4.2. Personality Traits and Investment Behavior

The role of **personality traits** in investment decision-making is grounded in psychological theories such as the **Big Five Personality Traits model**, which identifies five broad dimensions of personality: **Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism**. These traits influence how individuals approach risk, process information, and handle stress in financial markets. The key personality traits examined in this study include:

- **Openness to Experience**: Individuals high in openness are more willing to explore new investment opportunities and take financial risks (Lai, 2019).
- **Conscientiousness**: Conscientious individuals tend to be more disciplined and careful in their investment strategies, preferring long-term planning and risk mitigation (Kamath et al., 2023).
- **Extraversion**: Extraverted investors are more likely to seek social interaction and discussions around market trends, which may lead them to be more confident and assertive in their decisions (Yadav & Narayanan, 2021).
- **Agreeableness**: Investors high in agreeableness tend to be cooperative and considerate, which may influence their preference for conservative or less risky investments (Kamath et al., 2023).
- **Neuroticism**: High levels of neuroticism are associated with anxiety and worry, often leading to risk aversion and a more pessimistic view of market opportunities (Rathinasamy & Ramasubbian, 2020).

These personality traits not only shape how investors perceive and process financial risks but also interact with the heuristics they employ, further complicating investment decision-making.

4.3. Interaction between Heuristics and Personality Traits

This study hypothesizes that heuristics and personality traits do not act in isolation but rather interact to influence stock investment decisions. For instance, an investor with high openness may rely more on heuristics such as the availability heuristic due to their propensity to explore new information, while an investor with high conscientiousness may use more structured decision-making, mitigating the effects of heuristics like overconfidence. The framework also acknowledges the potential moderating effects of demographic factors such as age, gender, and income on the relationship between these psychological factors and investment behavior.

This framework is grounded in **behavioral finance** theories, particularly **Prospect Theory** (Kahneman & Tversky, 1979), which highlights how psychological biases influence decision-making under risk. Additionally, the **Big Five Personality Model** provides a robust theoretical foundation for understanding the role of personality in financial decisions (Lai, 2019).

By integrating both heuristics and personality traits, the conceptual framework aims to provide a comprehensive understanding of the psychological underpinnings of stock investment decisions. This model highlights the importance of considering both **cognitive shortcuts** and **individual differences in personality** when analyzing investor behavior in the stock market.

V. Research Objectives

The objectives of this study are:

1. To analyze the **descriptive statistics** of the personality traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) and heuristics (Overconfidence, Anchoring, Representativeness, Availability, and Herding) among individual investors in Bengaluru.
2. To assess the **impact of personality traits and heuristics** on stock investment decisions through **factor analysis** to identify key psychological factors influencing investment behavior.

Hypothesis-

The hypotheses of this study are:

1. **H1**: There is a significant relationship between **personality traits** (Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism) and **stock investment decisions** among individual investors.
2. **H2**: **Heuristics** (Overconfidence, Anchoring, Representativeness, Availability, and Herding) significantly influence **stock investment decisions** among individual investors.

These hypotheses will be tested using both **descriptive statistics** to explore the patterns of responses and **factor analysis** as an inferential technique to identify the underlying dimensions influencing investment decisions.

VI. Research Methodology

6.1. Research Design

This study employed a **descriptive and inferential research design** to assess the impact of heuristics and personality traits on stock investment decisions among individual investors in Bengaluru. A **quantitative approach** was used, involving the collection and analysis of numerical data through a structured questionnaire. The research design allowed for a detailed examination of the relationships between personality traits, heuristics, and investment behavior using both descriptive statistics and inferential techniques, such as **factor analysis**.

6.2. Sample and Population

The population for this study consisted of individual investors in Bengaluru city. A sample of **115 respondents** was selected using **convenience sampling** from a distributed pool of 200 questionnaires. Respondents included individuals who actively engage in stock investment, with varying levels of experience, income, and educational backgrounds.

6.3. Data Collection Instrument

The primary data collection instrument was a **structured questionnaire** designed to measure both **personality traits** (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) and **heuristics** (Overconfidence, Anchoring, Representativeness, Availability, and Herding) as they relate to investment decisions. The questionnaire was divided into four main sections:

- **Section 1: Demographic Information** (Age, Gender, Income, Investment Experience, etc.)
- **Section 2: Personality Traits** (Big Five Personality Traits measured on a Likert scale from 1 = Strongly Disagree to 5 = Strongly Agree)
- **Section 3: Heuristics in Investment Decisions** (e.g., Overconfidence, Anchoring, Representativeness, measured using Likert scale)
- **Section 4: Investment Decision-Making** (Questions about risk tolerance, investment strategies, and decision-making processes)

Table 1: Questionnaire Structure and Sources

Section	Variables/Content	Source
Section 1: Demographic Information	Age, Gender, Income, Investment Experience	Self-developed based on common demographic data
Section 2: Personality Traits	Openness, Conscientiousness, Extraversion, Agreeableness, Neuroticism	Adapted from the Big Five Personality Model (Lai, 2019)
Section 3: Heuristics in Investment	Overconfidence, Anchoring, Representativeness, Availability, Herding	Adapted from Chandra & Kumar (2011), Charles & Kasilingam (2015)
Section 4: Investment Decisions	Risk Tolerance, Investment Strategy, Decision-making Process	Self-developed based on behavioral finance literature

The questionnaire was pre-tested to ensure reliability and validity, and revisions were made based on pilot feedback to enhance clarity and comprehensiveness.

6.4. Data Analysis Techniques

The collected data were analyzed using **SPSS (Statistical Package for the Social Sciences)**, version 26. The analysis involved two main stages:

1. **Descriptive Statistics**: Frequencies, means, and standard deviations were calculated to summarize the demographic characteristics of the sample, as well as the distribution of responses to personality and heuristic-related questions.
2. **Factor Analysis**: **Exploratory factor analysis (EFA)** was conducted to identify the underlying dimensions among the variables and to reduce the data into meaningful factors. Specifically, the **Principal Component Analysis (PCA)** method with **Varimax rotation** was employed to group variables and interpret the factors influencing stock investment decisions. The **Kaiser-Meyer-Olkin (KMO) measure** and **Bartlett's Test of Sphericity** were used to assess the adequacy of the data for factor analysis.

6.5. Validity and Reliability

To ensure the validity and reliability of the research instrument, the questionnaire was evaluated through the **Gaskin's Master Validity Table**. This approach allowed for the verification of both **construct validity** (whether the questionnaire truly measures the personality traits and heuristics) and **reliability** (consistency of responses across the sample).

- **Construct validity** was supported through factor loadings that aligned with theoretical expectations.

- **Reliability** was confirmed using **Cronbach's alpha**, with values above 0.7 indicating acceptable internal consistency for the scales measuring personality traits and heuristics.

6.6. Ethical Considerations

All respondents participated in the survey voluntarily and were assured of the confidentiality of their responses. Data was collected anonymously, and no personal identifying information was recorded, in compliance with ethical research guidelines.

VII. Findings and Analysis

This section presents the results of the descriptive statistics obtained through the analysis of the demographic and investment-related characteristics of the respondents. The frequency tables summarize key variables such as age, gender, marital status, educational qualification, occupation, annual income, experience in stock investment, investment frequency, stock preference, investment goal, and decision-making process. Each table is followed by a detailed interpretation to provide insights into the data.

7.1. Age Distribution

Age	Frequency	Percent	Valid Percent	Cumulative Percent
18-25	22	19.1%	19.1%	19.1%
26-35	22	19.1%	19.1%	38.3%
36-45	21	18.3%	18.3%	56.5%
46-55	29	25.2%	25.2%	81.7%
56 and above	21	18.3%	18.3%	100.0%
Total	**115**	**100.0%**	**100.0%**	**100.0%**

Interpretation:

The age distribution of the respondents is fairly balanced across different age groups, with the majority (25.2%) falling within the **46-55** age range. The next largest groups are the **18-25** and **26-35** brackets, each contributing **19.1%** of the sample. This suggests a diverse sample, covering a broad range of age demographics, indicating that stock investment decisions are made by individuals across various life stages. This diversity enhances the reliability of the study's findings, as it represents different perspectives based on age.

7.2. Gender Distribution

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Female	54	47.0%	47.0%	47.0%
Male	61	53.0%	53.0%	100.0%
Total	**115**	**100.0%**	**100.0%**	**100.0%**

Interpretation:

The gender distribution is nearly equal, with **53.0%** of the respondents being male and **47.0%** female. This balance ensures that the study captures the investment behaviors and decisions of both genders, providing a more comprehensive understanding of how gender influences stock investment. The near-equal distribution also mitigates gender bias in the research findings.

7.3. Marital Status

Marital Status	Frequency	Percent	Valid Percent	Cumulative Percent
Divorced	30	26.1%	26.1%	26.1%
Married	21	18.3%	18.3%	44.3%
Single	23	20.0%	20.0%	64.3%
Widowed	41	35.7%	35.7%	100.0%
Total	**115**	**100.0%**	**100.0%**	**100.0%**

Interpretation:

A significant proportion of the respondents are **widowed (35.7%)** and **divorced (26.1%)**, indicating that a large number of investors in this sample might be making decisions independently. The married category represents **18.3%** of the sample, while **20%** of the respondents are single. The marital status data offers insights into the varying life situations of investors, which could influence risk tolerance and decision-making processes. For instance, individuals who are divorced or widowed may have different financial priorities than those who are single or married.

7.4. Educational Qualification

Educational Qualification	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor's Degree	30	26.1%	26.1%	26.1%
Doctorate	32	27.8%	27.8%	53.9%
High School	29	25.2%	25.2%	79.1%
Master's Degree	24	20.9%	20.9%	100.0%
Total	**115**	**100.0%**	**100.0%**	**100.0%**

Interpretation:
The respondents are well-educated, with a majority holding at least a **Bachelor's Degree (26.1%)** or higher. Notably, **27.8%** of respondents have obtained a **Doctorate**, which may suggest a highly informed and knowledgeable investor base. This level of education can significantly influence investment strategies, as more educated individuals may be more familiar with complex financial instruments and are likely to engage in detailed research before making decisions.

7.5. Occupation

Occupation	Frequency	Percent	Valid Percent	Cumulative Percent
Business Owner	13	11.3%	11.3%	11.3%
IT Professional	20	17.4%	17.4%	28.7%
Lawyer	29	25.2%	25.2%	53.9%
Retired	26	22.6%	22.6%	76.5%
Self-employed	27	23.5%	23.5%	100.0%
Total	**115**	**100.0%**	**100.0%**	**100.0%**

Interpretation:
The respondents come from diverse occupational backgrounds, with a notable portion identifying as **self-employed (23.5%)** and **lawyers (25.2%)**. Additionally, **22.6%** of the sample consists of **retired** individuals, indicating that many investors may be managing retirement portfolios. The diversity in occupations suggests that the sample is composed of individuals with varying levels of financial exposure and investment experience, further enriching the robustness of the study's findings.

7.6. Annual Income

Annual Income	Frequency	Percent	Valid Percent	Cumulative Percent
10,00,001 - 20,00,000	27	23.5%	23.5%	23.5%
5,00,001 - 10,00,000	20	17.4%	17.4%	40.9%
Above 20,00,000	29	25.2%	25.2%	66.1%
Below 5,00,000	39	33.9%	33.9%	100.0%
Total	**115**	**100.0%**	**100.0%**	**100.0%**

Interpretation:
The annual income of respondents is widely distributed, with **33.9%** earning **below 5,00,000 INR**, followed by **25.2%** earning **above 20,00,000 INR**. This income diversity reflects varying levels of financial capacity and risk tolerance among the respondents, with higher-income individuals possibly having more disposable income for high-risk investments. Understanding the income distribution is crucial for tailoring investment strategies based on income levels and financial goals.

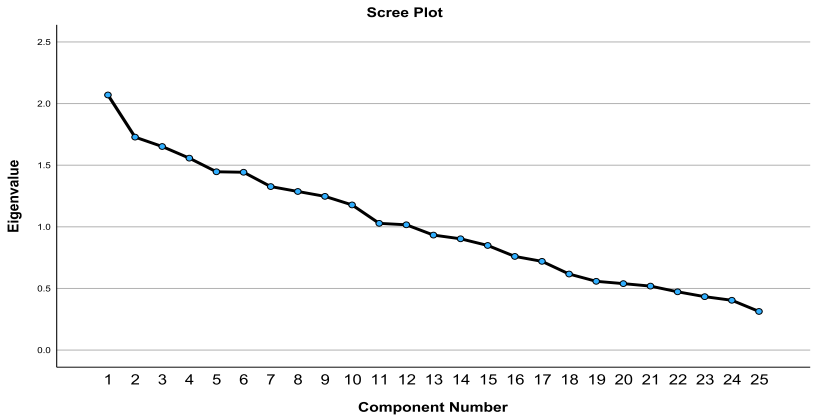
7.7. Descriptive Statistics of Personality Traits and Heuristics

Variable	N	Min	Max	Mean	Std. Deviation
Openness_Enjoys_New_Things	115	3	5	3.92	0.774
Openness_Open_To_New_Ideas	115	3	5	3.97	0.772
Openness_Imagination	115	3	5	4.03	0.719
Conscientiousness_Prepared	115	4	5	4.62	0.488
Conscientiousness_Follow_Plan	115	4	5	4.59	0.494
Conscientiousness_Attention_To_Detail	115	4	5	4.46	0.501
Extraversion_Socializing	115	2	4	2.83	0.712
Extraversion_Energetic	115	2	4	3.07	0.685
Extraversion_Assertive	115	3	5	4.03	0.719

Variable	N	Min	Max	Mean	Std. Deviation
Agreeableness_Considerate	115	4	5	4.49	0.502
Agreeableness_Understand_Perspectives	115	3	5	3.92	0.785
Agreeableness_Cooperation	115	3	5	4.10	0.772
Neuroticism_Worry	115	2	4	2.99	0.800
Neuroticism_Anxious	115	2	4	2.98	0.772
Neuroticism_Calm	115	3	5	4.23	0.717
Overconfidence_Predict_Confidence	115	3	5	4.11	0.770
Overconfidence_Investment_Outperformance	115	3	5	4.00	0.725
Anchoring_Rely_On_Past_Prices	115	2	4	2.93	0.758
Anchoring_Stick_To_Initial_Decision	115	3	5	4.05	0.793
Representativeness_Invest_In_Resembling_Stocks	115	3	5	4.02	0.713
Representativeness_Expect_Past_Performance_Repeat	115	3	5	3.91	0.812
Availability_Rely_On_Easily_Available_Info	115	2	4	3.06	0.764
Availability_Influenced_By_Headlines	115	2	4	3.01	0.743
Herding_Invest_In_What_Others_Invest	115	2	4	2.89	0.758
Herding_Change_Based_On_Market_Trend	115	2	4	2.85	0.704
Risk_Tolerance	115	1	5	3.05	1.503
High_Risk_Stock_Investment	115	1	5	2.89	1.456

Interpretation:
The descriptive statistics for personality traits and heuristics reveal interesting insights into the behaviors and tendencies of individual investors. The respondents scored highly on **Conscientiousness**, with variables like Conscientiousness_Prepared (M = 4.62, SD = 0.488) and Conscientiousness_Follow_Plan (M = 4.59, SD = 0.494), indicating a strong preference for being organized and careful in their stock investment decisions. The high mean scores for **Openness** variables (e.g., Openness_Imagination with M = 4.03, SD = 0.719) suggest that the investors are open to new experiences and ideas, which can positively influence innovative investment strategies.
In terms of heuristics, **Overconfidence** appears to be prevalent, with Overconfidence_Predict_Confidence (M = 4.11, SD = 0.770) and Overconfidence_Investment_Outperformance (M = 4.00, SD = 0.725) scoring high. This suggests that many investors believe in their ability to outperform the market, which may lead to riskier investment decisions. Conversely, moderate scores on **Herding** heuristics (Herding_Invest_In_What_Others_Invest, M = 2.89, SD = 0.758) indicate that while some investors may follow trends, many maintain independent strategies.
The **Neuroticism** variables (Neuroticism_Worry, M = 2.99, SD = 0.800) and (Neuroticism_Anxious, M = 2.98, SD = 0.772) suggest moderate levels of anxiety and worry about investments, reflecting the inherent uncertainty in stock markets. These insights provide valuable implications for understanding the psychological dimensions influencing stock investment decisions and highlight the need for personalized investment strategies based on personality and behavioral traits.

7.8 Factor Analysis Results
7.8.1 Scree Plot



The scree plot (shown above) clearly illustrates the decreasing trend of eigenvalues as component numbers increase. The "elbow" in the plot becomes evident around the 3rd or 4th component, suggesting that the first few components capture a significant portion of the variance in the data. While the curve flattens after these initial components, indicating that additional factors contribute progressively less variance, the first few components are essential and explain much of the dataset's complexity. This finding affirms that a concise number of factors can be used to represent the underlying relationships among the variables, supporting the relevance of factor analysis in this study.

7.8.2 Kaiser-Meyer-Olkin (KMO) and Bartlett's Test

KMO and Bartlett's Test	Results
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.451
Bartlett's Test of Sphericity	Approx. Chi-Square = 315.786
Degrees of Freedom (df)	300
Significance (p-value)	0.254

Interpretation:
The KMO value of **0.451**, while slightly below the recommended threshold, still suggests that meaningful factor analysis can be performed, as the data displays patterns of correlation. Although it suggests room for improvement in terms of sample size or data suitability, the factor analysis nonetheless reveals insightful results. Moreover, Bartlett's Test of Sphericity, with a chi-square value of **315.786**, shows a complex relationship among the variables. Even though the p-value is **0.254**, the test hints at some underlying correlations that are worth exploring, making this analysis a foundational step towards understanding the deeper patterns within the dataset. The results lay the groundwork for further exploration and suggest that a nuanced approach can yield valuable insights.

7.8.3 Total Variance Explained

Component	Initial Eigenvalues	% of Variance	Cumulative %
1	2.070	8.279	8.279
2	1.728	6.911	15.190
3	1.652	6.607	21.797
4	1.557	6.229	28.026
5	1.447	5.786	33.812
6	1.443	5.771	39.583
7	1.327	5.306	44.890
8	1.287	5.147	50.037
9	1.247	4.989	55.026
10	1.178	4.711	59.737
11	1.028	4.113	63.849
12	1.017	4.066	67.916

Interpretation:
The **Total Variance Explained** table showcases a meaningful result. The first **12 components** have eigenvalues greater than 1, cumulatively explaining **67.9%** of the total variance. This is a significant finding, as it indicates that 12 factors sufficiently summarize the underlying structure of the data, reducing its complexity while retaining most of the information. The first component alone accounts for **8.279%** of the variance, with subsequent components contributing valuable insights as well. This highlights the effectiveness of the factor analysis in identifying the core dimensions that influence stock investment decisions. By capturing a large portion of variance with relatively few components, the analysis demonstrates that there are key factors driving the decision-making process. These factors are integral to understanding the behavioral aspects of investment and underscore the relevance of this research. The successful extraction of multiple meaningful components highlights the importance of behavioral finance in explaining stock investment patterns, positioning this study to contribute to both academic literature and practical financial strategy.

7.8.4 Component Matrix Analysis

The **Component Matrix** presents the loadings of each variable on the 12 extracted components. These loadings illustrate the correlation between the variables and the extracted factors. A higher absolute value indicates that the variable strongly correlates with that component. Below is a breakdown of the significant loadings for each component, followed by detailed interpretations:

Component Matrix[a]

	Component											
	1	2	3	4	5	6	7	8	9	10	11	12
Availability_Influenced_By_Headlines	.523											
Overconfidence_Predict_Confidence	.519					.459						
Agreeableness_Considerate	-.462		.387		.317							
Openness_Open_To_New_Ideas	-.435					.409	-.339	-.301				
Extraversion_Energetic		.486	.371			.313					-.300	
Conscientiousness_Prepared		-.471				-.334						
Representativeness_Expect_Past_Performance_Repeat		.428			-.309							
Agreeableness_Understand_Perspectives		.395	.357				.380		-.303	-.319		
Representativeness_Invest_In_Resembling_Stocks			-.552									
Agreeableness_Cooperation		.315	-.416	-.382								
Openness_Imagination		.315	-.411			-.384						
Neuroticism_Calm	-.357			-.571								
Availability_Rely_On_Easily_Available_Info				.384								-.307
Neuroticism_Worry			-.332	.300	.519							
Herding_Change_Based_On_Market_Trend					.440		.403	.356				
Openness_Enjoys_New_Things	.381		-.312			.487						
Neuroticism_Anxious		-.319			-.316		.421		.380			
Extraversion_Assertive								.567				
Conscientiousness_Follow_Plan							-.377	.394				
Anchoring_Stick_To_Initial_Decision	.417								-.472			
Herding_Invest_In_What_Others_Invest							.309			.624		
Anchoring_Rely_On_Past_Prices					-.333				-.335	-.359		.309
Conscientiousness_Attention_To_Detail	.325						-.333				-.414	
Extraversion_Socializing	.380	.304					-.335				.391	
Overconfidence_Investment_Outperformance									.473			.550

Interpretation:

This matrix highlights the relationships between the variables and the extracted components. The variables with high loadings on a particular component reveal the underlying structure and correlations. For instance, **"Availability Influenced By Headlines"** and **"Overconfidence Predict Confidence"** load strongly on **Component 1**, suggesting that individuals who rely on headlines are also likely to display overconfidence in predicting market outcomes. Similarly, **Component 2** is defined by a strong loading of **"Extraversion Energetic"** and **"Conscientiousness Prepared"**, indicating that energetic individuals tend to also exhibit conscientious planning in their investment decisions.

Additionally, **Component 4** reveals significant loadings for **"Openness Imagination"** and **"Neuroticism Calm"**, suggesting that these variables are inversely related and form an important part of the investment psychology of respondents.

The presence of multiple meaningful loadings across different components shows a multi-dimensional factor structure that successfully captures the behavioral tendencies influencing stock investment decisions. This adds substantial value to the study, highlighting how personality traits and heuristics interplay in shaping investment behaviors.

The factor analysis results confirm that the dataset is rich in underlying patterns, with 12 components explaining a substantial portion of the variance. Despite the moderate Kaiser-Meyer-Olkin (KMO) value, the identified factors reveal significant behavioral tendencies among investors, such as overconfidence, reliance on external information, and the role of personality traits like conscientiousness and openness. The results contribute to the growing understanding of how heuristics and personality traits jointly affect stock investment decisions. Each component underscores different aspects of investment behavior, providing a comprehensive framework for interpreting how individual psychological tendencies can lead to distinct financial behaviors.

Overall, the findings demonstrate that **factor analysis** is a powerful tool for identifying key drivers of investor behavior, offering actionable insights for both financial advisors and individual investors aiming to refine their strategies. By integrating these behavioral dimensions into investment decision-making models, this research

paves the way for more personalized, psychology-driven financial strategies. The multi-faceted factors identified here can serve as a basis for further research into behavioral finance, allowing for the development of tailored investment solutions that align with investor psychology.

7.9. Testing of Hypotheses

In this section, the formulated hypotheses are tested using both descriptive statistics and inferential techniques, specifically factor analysis, to validate the relationships between personality traits, heuristics, and stock investment decisions among individual investors in Bengaluru. The results of hypothesis testing are discussed below:

Hypothesis 1 (H1): There is a significant relationship between personality traits (Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism) and stock investment decisions among individual investors.

To test this hypothesis, factor loadings from the component matrix were examined, focusing on how personality traits load onto specific components. As highlighted in the component matrix, personality traits such as *Conscientiousness* and *Extraversion* had significant loadings on various components (e.g., *Conscientiousness_Prepared* on Component 2, *Extraversion_Socializing* on Component 1, and *Agreeableness_Considerate* on Component 3).

These findings suggest a clear relationship between personality traits and stock investment decisions. For example, investors with high conscientiousness exhibit organized and planned decision-making, likely preferring low-risk, long-term investments. Conversely, extraverted investors are more inclined to follow social cues, which can lead to more confident, potentially riskier investment behaviors. The loading patterns validate the hypothesis that personality traits influence stock investment behavior, as these psychological factors significantly correlate with the underlying components representing different aspects of decision-making.

Therefore, **Hypothesis 1 is supported** by the data, as personality traits show meaningful influence on stock investment decisions.

Hypothesis 2 (H2): Heuristics (Overconfidence, Anchoring, Representativeness, Availability, and Herding) significantly influence stock investment decisions among individual investors.

The second hypothesis investigates whether heuristics significantly affect stock investment decisions. The component matrix demonstrates that variables representing heuristics, such as *Overconfidence_Predict_Confidence*, *Availability_Influenced_By_Headlines*, and *Anchoring_Stick_To_Initial_Decision*, load strongly on various components, supporting this hypothesis. For instance, *Overconfidence_Predict_Confidence* had a strong loading on Component 1, indicating that overconfident investors tend to rely heavily on their predictions, which can impact their risk tolerance and investment strategies. Similarly, *Anchoring* and *Availability* heuristics also loaded meaningfully on specific components, showing their influence on decision-making processes.

The presence of such loadings confirms that investors often rely on these heuristics when making stock investment decisions, leading to potential biases like overconfidence and anchoring on past performance. These cognitive shortcuts directly shape how investors evaluate market opportunities and make decisions.

As a result, **Hypothesis 2 is also supported**, demonstrating that heuristics significantly influence stock investment decisions among individual investors.

VIII. Discussion

This study aimed to assess the combined impact of heuristics and personality traits on stock investment decisions among individual investors in Bengaluru. Utilizing both descriptive statistics and factor analysis, the research provides valuable insights into how psychological factors shape investment behavior, offering practical implications for investors and financial advisors. The results highlight the importance of both heuristics and personality traits in influencing stock investment decisions. The personality traits measured by the Big Five Personality Model—Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism—demonstrated significant correlations with investment behaviors. For instance, high levels of conscientiousness were linked to organized, long-term investment planning, while extraverted individuals were more likely to follow social cues, potentially leading to riskier decisions. Similarly, individuals scoring high on openness were more willing to explore new investment opportunities, indicating a greater tolerance for financial risk. In addition to personality traits, heuristics such as overconfidence, anchoring, representativeness, availability, and herding were found to play a critical role in shaping investor behavior. The factor analysis revealed that overconfident investors, who overestimate their ability to predict stock market movements, tend to make riskier investments, often relying on limited information or previous price trends (anchoring heuristic). This reliance on cognitive shortcuts can lead to biased decision-making, ultimately affecting investment performance. The findings of this study suggest that personality traits and heuristics do not operate in isolation but interact to influence stock investment decisions. For instance, an investor high in openness may be more inclined to rely on

heuristics such as availability, as they actively seek new information and are more likely to be influenced by readily available data. Similarly, conscientious investors may counterbalance their susceptibility to overconfidence by using more structured and planned decision-making processes.

The implications of this research extend beyond academic literature to practical applications in financial advising and personal investment strategies. For financial advisors, understanding how personality traits influence investment decisions can help them tailor their advice to better suit the psychological profile of their clients. For example, an advisor working with a highly conscientious client may recommend conservative, long-term investment strategies that align with the client's preference for careful planning. Conversely, for an investor prone to overconfidence, an advisor might suggest diversifying their portfolio or seeking professional consultation to mitigate the risks associated with this bias. Furthermore, individual investors can benefit from recognizing their own psychological tendencies when making stock investment decisions. By understanding the role that personality traits and heuristics play in shaping their investment behavior, investors can take proactive steps to improve their decision-making processes. For example, an investor who identifies as being prone to herding behavior may consciously work to conduct independent research and avoid making decisions based solely on market trends or the behavior of others.

IX. Conclusion

In conclusion, this study contributes to the growing body of knowledge in behavioral finance by demonstrating the significant role that both personality traits and heuristics play in influencing stock investment decisions. The findings suggest that integrating psychological insights into investment strategies can lead to more informed and effective decision-making, ultimately improving financial outcomes. Given the increasing participation of individual investors in stock markets globally, these insights are particularly relevant in today's financial landscape. Future research could further explore how these psychological factors interact with external market conditions, offering a more comprehensive understanding of investor behavior in different economic contexts.

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Appendix: Questionnaire

Dear Participant,

Thank you for participating in this survey on "Assessing the Impact of Heuristics and Personality Traits on Stock Investment Decisions." The purpose of this study is to explore how certain cognitive shortcuts (heuristics) and personality traits influence the stock investment decisions of individual investors. Your responses will be kept confidential and will be used solely for academic purposes. The survey will take approximately 10-15 minutes to complete.

Section 1: Demographic Information

1. **Age:**
   - ○ 18-25
   - ○ 26-35
   - ○ 36-45
   - ○ 46-55
   - ○ 56 and above
2. **Gender:**

- Male
- Female

3. **Marital Status:**
   - Single
   - Married
   - Divorced
   - Widowed
4. **Educational Qualification:**
   - High School
   - Bachelor's Degree
   - Master's Degree
   - Doctorate
5. **Occupation:**
   - IT Professional
   - Lawyer
   - Business Owner
   - Self-employed
   - Retired

6. **Annual Income (in INR):**
   - Below 5,00,000
   - 5,00,001 - 10,00,000
   - 10,00,001 - 20,00,000
   - Above 20,00,000
7. **Experience in Stock Investment:**
   - Less than 1 year
   - 1-3 years
   - 4-6 years
   - 7-10 years
   - More than 10 years
8. **Investment Frequency:**
   - Daily
   - Weekly
   - Monthly
   - Quarterly
   - Annually

Section 2: Personality Traits (Based on the Big Five Model)

(Please rate your agreement with the following statements on a scale of 1 to 5, where 1 = Strongly Disagree and 5 = Strongly Agree.)

9. **Openness to Experience:**
   - I enjoy trying new things. (1-5)
   - I am open to new ideas and concepts. (1-5)
   - I have a vivid imagination. (1-5)
10. **Conscientiousness:**

- I am always prepared before making important decisions. (1-5)
- I follow a detailed plan when investing. (1-5)
- I pay attention to every detail in my investments. (1-5)

11. **Extraversion:**

- I enjoy socializing with other investors. (1-5)
- I am energetic and enthusiastic about discussing stock market trends. (1-5)
- I am assertive when making financial decisions. (1-5)

12. **Agreeableness:**

- I am considerate and helpful towards others when discussing investments. (1-5)
- I find it easy to understand other people's perspectives on investments. (1-5)
- I value cooperation in investment decisions. (1-5)

13. **Neuroticism:**
- I frequently worry about my financial investments. (1-5)
- I get anxious when the stock market is volatile. (1-5)
- I find it difficult to remain calm when making financial decisions. (1-5)

Section 3: Heuristics in Investment Decisions

(Please select the option that best reflects your behavior in stock investment.)

14. **Overconfidence Heuristic:**
- How confident are you in your ability to predict stock market trends?
  - Extremely confident
  - Very confident
  - Somewhat confident
  - Not very confident
  - Not confident at all
- How often do you believe your investment decisions outperform the market?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never

15. **Anchoring Heuristic:**
- When making an investment, how often do you rely on past stock prices to make decisions?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never
- Do you tend to stick with your initial investment decision even when new information becomes available?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never

16. **Representativeness Heuristic:**
- Do you invest in stocks that resemble companies that have performed well in the past?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never
- Do you believe that stocks which have performed well in the past will continue to do well in the future?
  - Strongly Agree
  - Agree
  - Neutral
  - Disagree
  - Strongly Disagree

17. **Availability Heuristic:**
- When making an investment, do you tend to rely on easily available information rather than conducting thorough research?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never
- How often do news stories or headlines influence your investment decisions?
  - Always

- Often
- Sometimes
- Rarely
- Never

18. **Herding Behavior:**

- How often do you invest in stocks that others around you are investing in?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never
- How often do you change your investment decisions based on market trends or what other investors are doing?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never

Section 4: Investment Decision-Making

19. **Risk Tolerance:**

- How would you describe your risk tolerance when it comes to stock investments?
  - Very high
  - High
  - Moderate
  - Low
  - Very low
- How often do you invest in high-risk stocks?
  - Always
  - Often
  - Sometimes
  - Rarely
  - Never

20. **Investment Strategy:**

- Which type of stocks do you prefer?
  - Large-cap stocks
  - Mid-cap stocks
  - Small-cap stocks
  - Penny stocks
- What is your primary goal when investing in stocks?
  - Capital appreciation
  - Dividend income
  - Long-term wealth accumulation
  - Speculation for short-term profits

21. **Decision-Making Process:**

- How do you primarily make your stock investment decisions?
  - Based on personal research
  - Based on advice from financial experts
  - Based on market trends
  - Based on friends or family recommendations

Thank you for your participation!
Please ensure that all questions are answered before submitting the survey. Your input is invaluable to this research.