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Behavioural Biases, Financial Literacy and Investment Decision Quality: Evidence from Individual Investors

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Abstract

This study explores the relationship between cognitive biases, emotional factors, financial literacy and individual investors' investment decision quality. On the data collected from 200 participants, the investigation examines the effects of overconfidence, loss aversion, herding behaviour, greed, fear, financial literacy and risk tolerance on decision-making. The findings show that overconfidence and greed positively impact the quality of investment decisions, whereas fear, loss aversion and herding behaviour have a negative impact with investment decision quality. Further, financial literacy and risk tolerance are the significant and recommended predictors, in addition to the necessity of education and dissuasive risk-taking. The conclusions are consistent with the current niche of behavioural finance literature, demonstrating the transformation of cognitive biases and emotions into a two-edged sword. The studies' practical applications suggest the necessity of creating specialized financial training programs and emotional coaching to offset and improve the decision quality of cognitive biases. This research study would add to the collective knowledge regarding investment behaviour and provide the inputs needed for investors to uplift the quality of financial decision-making.

Keywords: *Financial Literacy, Overconfidence, Loss aversion, Herding Behaviour, Greed, Fear and Risk Tolerance.*

Introduction

One of the significant factors in a country's development criterion is its economic stability, which has been essential for long-term growth. Among the rapidly growing developing

countries, India has progressed at a greater pace than most of them during the period since reforms in liberalization in the early 1990s (Srinivasan, 2020). Among other factors, the capital markets have emerged as a prime economic activity according to resilience and transformation potential. The growth of disposable incomes and increased financial literacy contributes to the immense rise in retail investor participation, marking a paradigm shift in the nation's investment environment (Bhatt & Apurva, 2014).

The stock market is generally a useful barometer of the state of the economy and is a great capital-raising ground for businesses while allowing for the efficient allocation of resources to productive investments. This dual role fosters wealth creation and enhances market liquidity and, hence, relative ease in buying or selling equities, thereby boosting confidence (Chary et al., 2019). However, whereas the classical approach presumes that the participants in a market act rationally to maximize utility, real-world evidence tells a different story. Behavioural sciences show that investment decisions are very often driven by psychological

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biases, emotions, and cognitive shortcuts and, therefore, systematically deviate from rational Behaviour (Kahneman & Tversky, 1979).

Behavioural economics tries to challenge the standard view of a rational economic agent by ascertaining the way in which irrationality does matter in deciding issues (Thaler, 2016). It is often decided without much thought, emotionally, or an intuitive short-cut. Researchers have shown the strong influence that cognitive biases play, such as loss aversion and framing effect in Prospect Theory as developed by Kahneman and Tversky (1979). For example, their study showed how people tend to overweigh potential losses relative to equivalent gains, thus being risk-averse even when logic would have it otherwise (Kahneman & Tversky, 1979).

The insights of Dan Ariely further underscore the prevalence of irrationality in financial decisions. In Predictably Irrational (2008), Ariely highlights how contextual factors and emotions shape consumer and investor Behaviour, often deviating from economic rationality. These findings are critical for understanding stock markets, where decisions are frequently influenced by heuristics, anchoring, and herd mentality (Barber & Odean, 2008). For example, studies have shown that individual investors are disproportionately attracted to attention-grabbing stocks—those making headlines or experiencing unusual trading volumes—while neglecting more stable, less publicized opportunities (Barber & Odean, 2008). India's unique interplay of cultural, demographic, and economic factors further accentuates Behavioural biases in stock market investments. Historical events like the dot-com bubble, the 2008 financial crisis, and the COVID-19 pandemic underscore the susceptibility of Indian investors to panic selling, speculative bubbles, and herd Behaviour (Singh, 2012). These phenomena reveal the significant role of emotions, such as fear and greed, in driving market trends (Sahni, 2012). For instance, many retail investors exhibit the disposition effect during market downturns, selling profitable stocks prematurely while holding onto losing ones in the hope of recovery (Bisen, 2013).

The demographic diversity of Indian investors adds another layer of complexity to their decision-making processes. Research shows that age, gender, education, and regional background significantly influence investment Behaviour (Harikanth & Pragathi, 2012). Younger investors, for instance, are often swayed by media coverage and online discussions, while older investors rely on traditional financial advice. This dynamic highlights the importance of tailoring financial education and regulatory measures to address different investor segments' specific needs and vulnerabilities (JaeHong et al., 2010).

Behavioural finance offers a comprehensive framework for understanding these deviations from rationality. Unlike traditional finance, which assumes efficient markets and logical decision-making, Behavioural finance recognizes human cognition's limitations and psychological factors influence (Thaler, 2016). This perspective is invaluable for explaining anomalies in financial markets, such as bubbles, crashes, and asset mispricing (Loewenstein et al., 2001). For instance, overconfidence and self-attribution bias can lead to excessive trading, while herd Behaviour often drives speculative bubbles, resulting in significant market inefficiencies (Shiller, 2003).

The Indian stock market, characterized by its volatility and rapid growth, provides a fertile ground for exploring these Behavioural phenomena. The democratization of trading through digital platforms has expanded market participation but also amplified instances of irrational Behaviour among inexperienced investors (Kiyilar, 2009). Studies reveal that heuristics often result in suboptimal investment choices, such as anchoring on recent performance or herding with popular trends (Chira, 2008). These patterns are particularly evident in periods of market uncertainty, where fear and panic selling overshadow analytical decision-making (Sobota, 2009).

Given these dynamics, the current research explores the psychological and emotional factors influencing investor Behaviour in the Indian stock market. It aims to identify key Behavioural biases, such as anchoring, herding, and the disposition effect, and assess their impact on investment decisions. This study contributes

to a deeper understanding of the interplay between rationality and irrationality in financial markets, particularly in the context of emerging economies like India.

The significance of this research extends beyond academic inquiry. Understanding the Behavioural dimensions of investing can provide valuable insights for policymakers, regulators, and market participants. For example, identifying common biases can inform the design of educational programs to enhance financial literacy and emotional resilience among retail investors. Additionally, recognizing the prevalence of irrational Behaviours can help regulators develop targeted interventions to mitigate their adverse effects on market stability (Thaler & Sunstein, 2008). From an individual investor's perspective, this research highlights the importance of self-awareness and emotional control in making informed and effective investment decisions (Loewenstein et al., 2001).

The Indian stock market offers a compelling case for studying Behavioural finance, given its unique blend of rapid growth, demographic diversity, and susceptibility to psychological biases. By integrating insights from Behavioural economics and finance, this research seeks to unravel the complex dynamics of investor Behaviour, providing a nuanced understanding of the factors driving market trends and investment decisions.

Literature Review

Behavioural finance has significantly contributed to understanding how psychological and emotional factors influence investor decision-making. Traditional finance theories, such as the Efficient Market Hypothesis (EMH), posit that markets are rational and investors make decisions based solely on available information (Fama, 1970). However, anomalies like speculative bubbles and crashes challenge these assumptions, paving the way for Behavioural finance as an alternative paradigm (Shiller, 2003). This section reviews key contributions to Behavioural finance and their relevance to the Indian stock market, focusing on cognitive biases, heuristics, and the interplay between emotions and investment Behaviour.

Cognitive Biases in Investment Decisions

Cognitive biases significantly affect financial decision-making, often leading to deviations from rationality. Loss aversion, a core concept introduced by Kahneman and Tversky (1979), demonstrates how investors prioritize avoiding losses over making equivalent gains. Empirical studies confirm that loss aversion often drives risk-averse Behaviour during market downturns, such as panic selling observed during the 2008 financial crisis (Barberis & Thaler, 2003). Similarly, in the Indian context, Sahni (2012) observed that retail investors exhibited heightened loss aversion during market corrections, often liquidating their portfolios prematurely.

Overconfidence is another prevalent bias significantly impacting trading volumes and stock volatility (Odean, 1999). Overconfident investors overestimate their knowledge and predictive abilities, leading to excessive trading and suboptimal portfolio performance (Barber & Odean, 2001). Studies in the Indian market reveal similar patterns, particularly among younger investors who rely heavily on online trading platforms and underestimate market risks (Bisen, 2013).

Anchoring bias, where investors rely heavily on initial information or past experiences, influences investment choices. For example, Kumar et al. (2021) found that Indian investors often anchor on historical stock prices, leading to mispricing and delayed reactions to new information. This bias is particularly problematic during earnings announcements or significant market events, where anchoring prevents rational adjustments to updated information.

Heuristics and Simplified Decision-Making

Heuristics are mental shortcuts that investors use to make quick decisions, often at the expense of rationality. Representativeness heuristic, for instance, involves judging the likelihood of an event based on its similarity to a stereotype, leading to biased decision- making (Tversky & Kahneman, 1974). In the Indian

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stock market, investors frequently equate high-profile firms or blue-chip stocks with guaranteed returns, ignoring fundamental analysis (Bhatia & Banga, 2015).

Herding Behaviour, another heuristic, occurs when individuals mimic the actions of others, assuming that collective decisions are inherently correct. Empirical studies have consistently documented herding tendencies during market volatility, leading to bubbles and crashes (Christie & Huang, 1995). For example, Chira et al. (2008) demonstrated that herding among

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Indian retail investors amplifies market fluctuations as individuals follow trends rather than analyze intrinsic stock values.

Emotional Influences on Investing

Emotions play a crucial role in financial decision-making, often overriding analytical reasoning. Fear and greed, in particular, are potent drivers of market dynamics. Shiller (2003) highlighted how emotional contagion during speculative bubbles creates irrational exuberance, while fear-induced panic selling exacerbates market downturns. Indian investors exhibit similar tendencies, as observed during the COVID-19 pandemic, where heightened fear led to significant capital outflows from equity markets (Kaur & Gupta, 2021).

Ariely (2008) further emphasized how emotions distort rational decision-making, highlighting the role of immediate gratification in financial choices. Indian investors, particularly those new to the market, often prioritize short-term gains over long-term wealth creation, driven by emotional responses to market trends (Harikanth & Pragathi, 2012).

Behavioural Biases in the Indian Context

The unique socio-economic and demographic characteristics of India add complexity to Behavioural finance. Gender differences, for instance, significantly influence investment Behaviour. Studies indicate that male investors are more prone to overconfidence and risk- taking, while female investors exhibit greater risk aversion and reliance on financial advice (Hirshleifer & Teoh, 2003). These patterns are evident in the Indian market, where women often prefer conservative investment options like fixed deposits or gold (Bansal, 2018).

Regional diversity also impacts Behavioural biases. For example, investors from metropolitan areas are more likely to engage in speculative trading and rely on digital platforms, while those from rural areas prefer traditional investment avenues (Harikanth & Pragathi, 2012). Education and financial literacy further shape these Behaviours, with literate investors showing a higher propensity for equity investments and a better understanding of market dynamics (JaeHong et al., 2010).

Hypotheses Development

The literature reviewed highlights the critical role of Behavioural biases in shaping investor decisions. Based on these insights, the following hypotheses are proposed:

- H1: Investors with high overconfidence will demonstrate excessive trading activity, leading to suboptimal portfolio performance (Barber & Odean, 2001; Bisen, 2013).
- H2: Loss aversion significantly influences investment decisions during market downturns, resulting in panic selling (Kahneman & Tversky, 1979; Sahni, 2012).
- H3: Anchoring bias will lead to delayed reactions to new information, particularly during earnings announcements or significant market events (Kumar et al., 2021).
- H4: Herding Behaviour will exacerbate market volatility, as investors mimic collective actions during periods of uncertainty (Christie & Huang, 1995; Chira et al., 2008).
- H5: Emotional factors, such as fear and greed, will disproportionately affect less experienced investors, leading to short-term decision-making (Shiller, 2003; Kaur & Gupta, 2021).

Key Variables and Measurement Scales

Variable	Description	Measurement Scale
Investment	The effectiveness of an investor's	Self-reported on a **5-point**

Decision Quality	decisions is based on risk-adjusted returns and diversification.	**Likert scale**.
Behavioural Biases	This includes loss aversion, overconfidence, and herding Behaviour, which influence investment decisions.	Adapted scales on **5-point Likert scales**.
Emotional Factors	The impact of **Fear and Greed** on decision-making under uncertainty.	Measured on a **7-point Likert scale**.
Financial Literacy	The ability to understand and use financial concepts effectively.	An accurate/false scale is based on cumulative scoring.
Risk Tolerance	The willingness of an investor to accept financial risk in their portfolio.	Graded on a **5-point Likert scale**.
Demographics	Includes **Age**, **Gender**, **Education Level**, and **Investment Experience**.	Collected as continuous, nominal, or ordinal variables.

Data and Sampling Section

The data for this study was initially collected from 200 individual investors across various demographic backgrounds in India. A structured questionnaire was administered, capturing responses on key variables such as investment decision quality, Behavioural biases (loss aversion, overconfidence, herding Behaviour), emotional factors (fear and greed), financial literacy, and risk tolerance. The purposive sampling method targeted investors with active equity and mutual funds portfolios. Participants were selected from investment forums, financial planning events, and online financial advisory platforms, ensuring a diverse representation of age, gender, and educational backgrounds.

Results Section

Descriptive Statistics

The dataset included responses from 200 participants, with the following demographic breakdown:

- **Gender**: 120 males (60%), 80 females (40%).
- **Age**: Mean age = 35 years (SD = 8.4), ranging from 21 to 55 years.
- **Education Level**: 50% had postgraduate education, 35% had undergraduate degrees, and 15% completed high school.
- **Investment Experience**: Mean experience = 5.6 years (SD = 3.2).

Variable	Mean	Standard Deviation	Range
Investment Decision Quality	3.8	0.82	1-5
Loss Aversion	3.4	0.76	1-5
Overconfidence	3.6	0.88	1-5
Herding Behaviour	2.9	0.71	1-5
Fear	3.2	0.85	1-5
Greed	3.5	0.91	1-5
Financial Literacy	0.72	0.15	0-1
Risk Tolerance	3.7	0.79	1-5

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Correlation Analysis

The Pearson correlation coefficients indicate significant relationships among key variables:

Variable 1	Variable 2	Correlation (r)	p-value
Investment Decision Quality	Overconfidence	0.62	< 0.01
Investment Decision Quality	Financial Literacy	0.48	< 0.01
Investment Decision Quality	Risk Tolerance	0.56	< 0.01
Loss Aversion	Investment Decision Quality	-0.41	< 0.01

Multiple Regression Analysis

The regression model examined the influence of Behavioural biases, emotional factors, financial literacy, and risk tolerance on investment decision quality.

Model Summary

- **R^2 = 0.64**, indicating that the predictors explain 64% of the variance in investment decision quality.
- **Adjusted R^2 = 0.62**, confirming the model's robustness.

Predictor	Beta Coefficient (β)	Standard Error	t-value	p-value
Loss Aversion	-0.28	0.07	-4.00	< 0.01
Overconfidence	0.38	0.06	6.33	< 0.01
Herding Behaviour	-0.15	0.05	-3.00	< 0.01
Fear	-0.10	0.04	-2.50	0.01
Greed	0.22	0.05	4.40	< 0.01
Financial Literacy	0.30	0.08	3.75	< 0.01
Risk Tolerance	0.35	0.06	5.83	< 0.01

Findings

The study's analysis revealed several critical insights into the factors influencing investment decision quality among individual investors. Behavioural biases were found to play a significant role in shaping investment decisions. **Overconfidence** emerged as a strong positive predictor, suggesting that investors with a heightened financial acumen tend to make more confident and seemingly rational investment decisions. However, biases such as **loss aversion** and **herding Behaviour** negatively impacted decision-making quality. Investors driven by fear of losses or a tendency to follow market trends without independent analysis exhibited poorer decision quality.

Emotional factors also influenced decision quality, albeit in varying ways. **Greed** positively contributed to decision-making, indicating that a controlled sense of ambition might encourage strategic and goal-oriented investments. Conversely, **fear** impacted decisions negatively, reflecting the detrimental effects of emotional distress or apprehension during market fluctuations. These findings highlight the dual-edged nature of emotions in financial contexts.

The role of **financial literacy** was particularly noteworthy. Higher financial literacy levels significantly improved investment decision quality, demonstrating the value of knowledge and understanding in navigating complex financial landscapes. Similarly, **risk tolerance** was positively associated with decision quality. Investors with a higher propensity to embrace calculated risks exhibited greater decision-making competence, likely due to their ability to align investment strategies with personal risk preferences.

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Overall, the results emphasize that a combination of cognitive, emotional, and skill-based factors determines the quality of investment decisions. While positive traits like overconfidence and greed can sometimes be advantageous, excessive reliance on biases or emotional reactions may hinder decision-making. The findings suggest that enhancing

financial literacy and fostering balanced emotional responses can mitigate the adverse effects of biases and improve overall investment outcomes.

Discussion

The results of this study align with and extend existing literature on the Behavioural and psychological determinants of investment decision-making. The positive impact of **overconfidence** on investment decision quality supports prior research, such as Barber and Odean (2001), which found that overconfident investors are more likely to trade actively and achieve higher returns in favorable market conditions. However, overconfidence must be interpreted cautiously, as excessive self-assurance could lead to reckless decision-making, as studies like Bhandari and Deaves (2006) highlight.

Loss aversion and **herding Behaviour**, which are negatively associated with investment decision quality, corroborate well-documented biases in the literature. Kahneman and Tversky's (1979) prospect theory explains loss aversion as the tendency to prioritize avoiding losses over securing gains, often resulting in overly conservative decisions. Similarly, herding Behaviour, as discussed by Shiller (2000), reflects the inclination to conform to collective market trends, often at the expense of rational analysis. The adverse effects of these biases underscore the need for interventions that encourage independent decision-making and rational risk assessment among investors.

The role of emotions, particularly **fear** and **greed**, adds a nuanced perspective to existing findings. While fear negatively affected decision quality, echoing studies like Loewenstein et al. (2001) that associate fear with risk aversion, greed's positive influence suggests that controlled ambition can drive better decisions. This dual effect of emotions aligns with research emphasizing the importance of emotional intelligence in financial contexts (Fenton- O'Creevy et al., 2011).

Financial literacy emerged as a significant predictor of investment decision quality, reinforcing the findings of Lusardi and Mitchell (2014), who highlighted the critical role of financial knowledge in enhancing decision-making capabilities. The positive association between financial literacy and decision quality aligns with studies advocating financial education programs to improve investor outcomes. Similarly, the positive impact of **risk tolerance** is consistent with studies by Grable and Lytton (1999), which found that risk-tolerant individuals are better equipped to make strategic and forward-looking investment decisions.

These findings validate existing theories and offer practical implications for investors and policymakers. Behavioural biases such as loss aversion and herding can be mitigated through targeted financial education programs emphasizing independent analysis and long-term investment strategies. Similarly, emotional training programs to foster emotional stability and resilience could enhance decision quality. Financial literacy initiatives, particularly those tailored to specific demographic groups, could further empower investors to make informed decisions.

The findings also highlight the importance of personal traits such as risk tolerance. While risk-averse individuals may require guidance to adopt more balanced strategies, risk-tolerant investors should be encouraged to leverage their propensity for calculated risks without veering into recklessness. This balance between cognitive, emotional, and skill-based factors aligns with the broader framework of Behavioural finance, which seeks to understand and address the complexities of human decision-making in financial contexts.

The interplay between Behavioural biases, emotional factors, and financial literacy suggests that investment decision quality is a multidimensional construct influenced by both individual traits and

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external factors. Policymakers and financial educators can use these insights to design interventions promoting rational and informed decision-making. For instance, integrating Behavioural finance principles into investor education programs could help individuals recognize and counteract their biases. Similarly, promoting financial literacy through digital platforms and community-based initiatives could enhance accessibility and impact.

Overall, this study contributes to the growing body of literature on Behavioural finance by highlighting the intricate relationships between biases, emotions, and skills in investment decision-making. The findings underscore the need for holistic approaches that address cognitive, emotional, and educational dimensions to improve investor outcomes. Future research could build on these insights by exploring the moderating effects of demographic factors such as age, gender, and cultural background, offering a more comprehensive understanding of investment Behaviour.

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