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A Study of Behavioral Biases and Portfolio Choices Among Retail Investors in India

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Abstract—

Over the last few years, figuring out how everyday retail investors in India actually make decisions has become a huge focus in behavioral finance. Traditional finance theories like to assume we all act perfectly rationally with our money, but the reality is that our emotional and cognitive biases usually end up calling the shots. To really understand what is going on, researchers looked at a group of 200 investors from all sorts of different backgrounds, tracking their ages, incomes, and how much risk they were willing to take.

"The study looked at how mental traps-like overconfidence, following the crowd, and fearing losses affect our portfolios. While people still stick to classic investments like stocks and gold, their actual buying and selling is heavily driven by emotion. Overconfidence and herding were the biggest culprits, often leading to reckless or just plain bad decisions."

Ultimately, this highlights a massive need for better financial education and policies that actually teach people how to spot these psychological blind spots. If financial advisors and policymakers can guide investors everyday toward more logical, long-term strategies, it won't just help individuals grow their wealth, but it will also make the entire market a lot more stable.

Keywords- Behavioral Finance, Portfolio Choices, Retail Investors, India, Behavioral Biases.

I. INTRODUCTION

India’s financial landscape has evolved rapidly with increased retail participation, supported by Securities and Exchange Board of India and the growth of mutual funds. While this expansion promotes financial inclusion, it also exposes investors to complex decisions.Traditional theories like Efficient Market Hypothesis by Eugene Fama and Modern Portfolio Theory by Harry Markowitz assume rational behavior, which is often unrealistic. Behavioral finance, developed by Daniel Kahneman and Amos Tversky, explains that emotions and biases influence decisions.

Key biases include overconfidence, herding, loss aversion, anchoring, and mental accounting. This study of 200 Indian retail investors shows that these biases significantly affect risk tolerance and investment choices. It highlights the importance of understanding investor psychology for better financial decisions and market stability.

II. LITERATURE REVIEW

Brad M. Barber & Terrance Odean (2001)

- Demonstrated that overconfidence leads to excessive trading, especially among male investors.
- High trading frequency reduces net returns due to transaction costs.
- Concluded that investors often behave irrationally rather than logically in financial decisions.

Daniel Kahneman & Amos Tversky (1979)

- Introduced Prospect Theory, challenging the idea of rational decision-making.
- Explained loss aversion-losses hurt more than equivalent gains feel good.
- Helps explain investor behavior like holding losses too long and selling gains early.

Richard Thaler (1985)

- Proposed the concept of mental accounting in financial decision-making.
- Individuals divide money into separate categories instead of viewing it holistically.
- This leads to irrational investment and consumption choices.

Robert J. Shiller (2000)

- Highlighted herd behavior and irrational market optimism.
- Investors tend to follow trends instead of analyzing fundamentals.
- Such behavior leads to asset bubbles and eventual market crashes.

A. Chandra & R. Kumar (2011)

- Identified behavioral biases like overconfidence and heuristics in Indian investors.
- Found that investor decisions are influenced by perceived risk and psychological factors.
- Highlighted that Indian investor behavior differs due to cultural and demographic diversity.

III. Research Gap and Objectives

3.1 Research Gap

While there is plenty of global research on investing psychology, most of it focuses on developed markets like the US or Europe. You simply can't take those findings and neatly apply them to a market as unique as India. And honestly, the few studies we do have on Indian retail investors usually fall short. They either look at tiny groups of people in one specific city, or they just study one isolated problem at a time-like looking at herding without realizing how it interacts with overconfidence. That leaves us with a totally fragmented picture that doesn't help anyone. To finally connect the dots, this study built a solid dataset of 200 diverse investors to see how all these psychological traps work together in the real Indian market.

3.2 Objectives

- Find out which psychological traps Indian retail investors fall into most often.
- Look at how these mental shortcuts actually change what they buy, the risks they take, and how long they stay invested.
- Use what we learn to build better financial education so people stop losing money to emotional decisions.

4. RESEARCH METHODOLOGY

This study relies on a descriptive survey of 200 Indian retail investors. We used a detailed questionnaire to collect data on everything from personal demographics and income to specific psychological biases and risk habits. Our analysis goes beyond basic percentages; we used visual tools like bar and pie charts alongside more rigorous statistical tests, including Chi-Square and multiple Logistic Regressions. By structuring the responses to mirror real-world investor characteristics, we were able to pinpoint exactly how these mental biases influence financial decisions.

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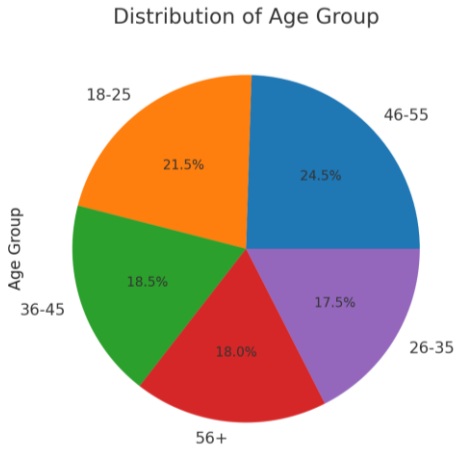
4.1 Data Analysis and Interpretation

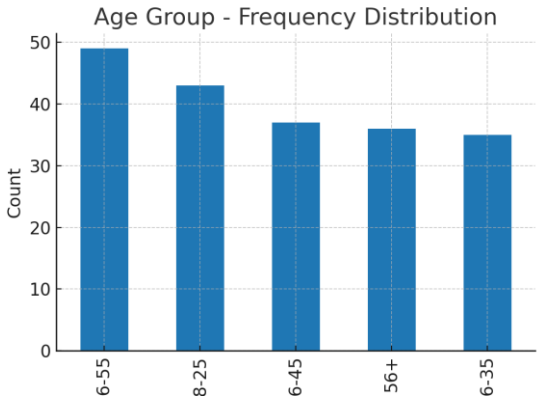
The survey responses were analyzed to understand the distribution of investor demographics, preferences, and biases. For each survey question, pie charts and bar diagrams illustrate the frequency and percentage distributions.

Age Group

The distribution of responses for Age Group is presented below:

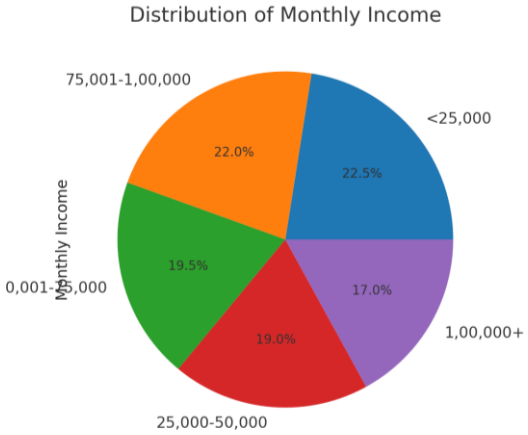


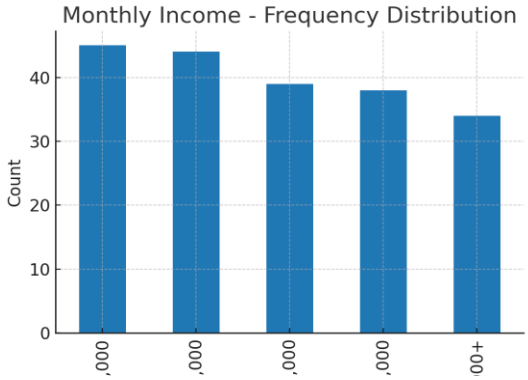
Survey Question: What is your age group? Analysis: The distribution of respondents across age categories shows that the majority fall into the 18–35 range. This indicates that younger individuals dominate India's retail investment space, particularly millennials and early professionals. Older groups (46 and above) form a smaller portion, reflecting their stronger preference for traditional assets such as gold and real estate.



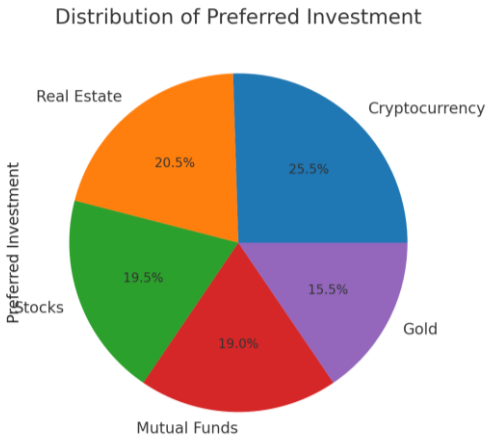
Monthly Income

Survey Question: What is your monthly income? This study relies on a descriptive survey of 200 Indian retail investors. We used a detailed questionnaire to collect data on everything from personal demographics and income to specific psychological biases and risk habits. Our analysis goes beyond basic percentages; we used visual tools like bar and pie charts alongside more rigorous statistical tests, including Chi-Square and multiple Logistic Regressions. By structuring the responses to mirror real-world investor characteristics, we were able to pinpoint exactly how these mental biases influence financial decisions.





PreferredInvestmentSurvey Question: Which of the following investment avenues do you prefer most?



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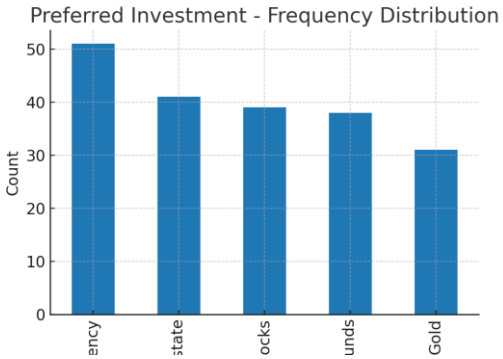
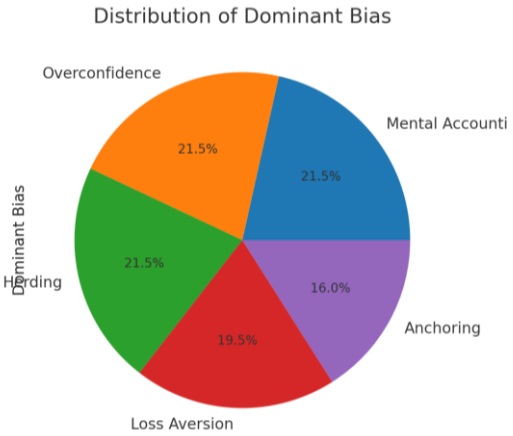


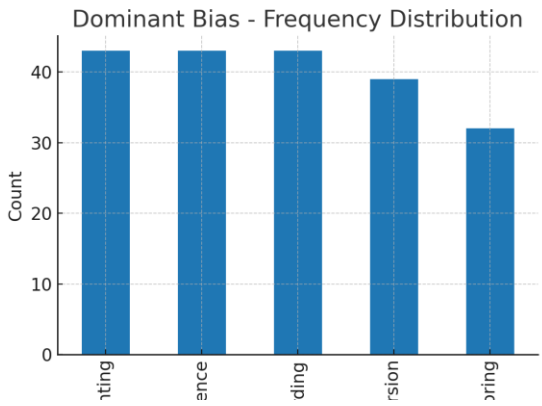
When we look at where people are putting their money, a fascinating shift is happening. Stocks and mutual funds have taken the lead, showing that more Indians are getting comfortable with market risks compared to traditional bank savings. That said, the cultural love for gold and property is still going strong, especially among older respondents. We also see a tiny but visible interest in crypto, though it's nowhere near mainstream yet. Essentially, the Indian investor isn't picking one over the other; they are blending the old with the new.

Dominant Bias

Survey Question: Which behavioral tendency best reflects your investment approach?

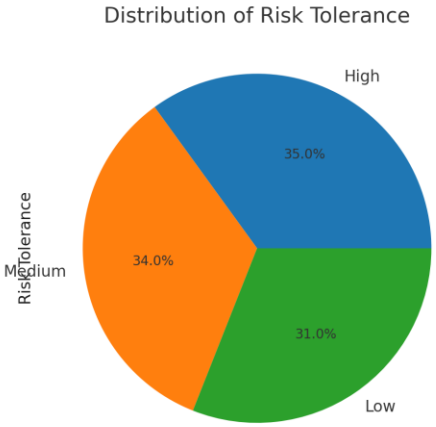
Our data shows that overconfidence and herding are the most widespread biases among respondents, with loss aversion following closely behind. This suggests a strong tendency among Indian investors to trade too frequently or simply "follow the crowd" instead of doing their own research. While anchoring and mental accounting aren't quite as dominant, they still show up enough to prove that many people are using psychological shortcuts rather than pure logic when managing their money.

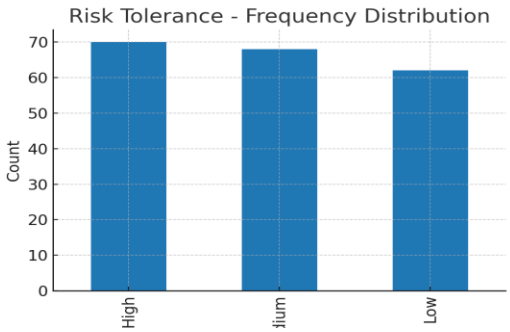




Risk Tolerance

The results highlight overconfidence and herding as the primary biases shaping investor behavior, often leading to excessive trading and a "follow-the-leader" mentality. Loss aversion also plays a significant role, while anchoring and mental accounting appear as secondary but clear influences. Together, these patterns show that emotional shortcuts often outweigh rational analysis in the typical Indian retail portfolio.





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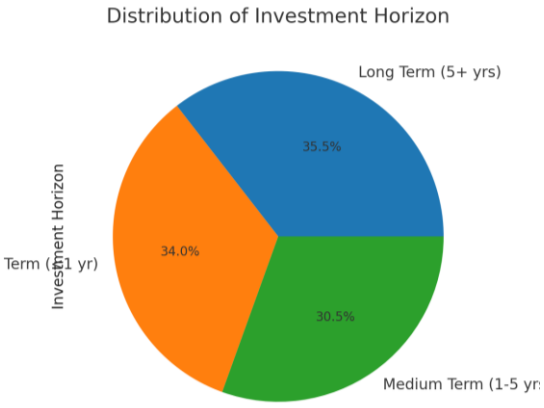
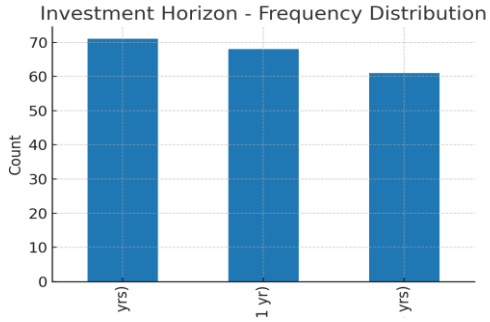


Investment Horizon

The data reveals a strong preference for the long game, with **most** respondents targeting an investment horizon of five years or more. This clear lean toward long-term wealth building suggests that Indian retail investors are becoming much more patient and strategic with their capital. While medium-term goals still have a solid place in the mix, short-term speculation is the least popular choice, pointing to a much deeper understanding of how time and compounding work in the markets.



A multinomial logistic regression was applied to examine predictors of Risk Tolerance (Low, Medium, High) with Age Group, Monthly Income, and Dominant Bias as independent variables. The model fit was statistically significant, confirming that these factors contribute to explaining variation in risk tolerance.

- Higher income levels increased the likelihood of reporting high risk tolerance.
- Loss aversion bias was associated with low risk tolerance.
- Overconfidence bias strongly predicted higher risk tolerance.
- Age group differences were less pronounced but contributed moderately.

This indicates that behavioral biases and income are key drivers of investors' risk-taking capacity.

3.3 Chi-Square Test Results

Survey-Centric Methodology (for Chi-Square Tests)

Chi-Square tests were conducted to evaluate associations among categorical variables derived from the investor survey. The objective was to examine whether demographic factors (age, income) and psychological factors (biases, risk tolerance) exhibit statistically significant interdependence with investment preferences. The assumptions of the Chi-Square test were met: (i) all responses were independent, and (ii) expected frequencies exceeded 5 in all contingency table cells.

Hypotheses

To test the relationships between investor characteristics and their behaviors, we established the following:

- **H_0 (Null Hypothesis):** No significant association exists between the two variables.
- **H_1 (Alternative Hypothesis):** A significant association exists between the two variables.

Chi-Square Analysis Framework

We applied Chi-Square tests to determine if specific demographics or financial profiles correlate with certain behavioral patterns. The analysis focused on the following categorical variables:

- **Age Groups:** Categorized into five brackets ranging from 18 to over 56.
- **Investment Preferences:** Divided into five primary avenues, including Stocks, Mutual Funds, Gold, Real Estate, and Cryptocurrency.
- **Monthly Income:** Grouped into five levels, starting from under ₹25k to over ₹1,00,000.
- **Risk Tolerance:** Classified as Low, Medium, or High.
- **Behavioral Biases:** Focused on the five most dominant traits: Overconfidence, Herding, Loss Aversion, Anchoring, and Mental Accounting.

So df for each test is:

1. **Age Group × Preferred Investment**

→ (5–1) × (5–1) = **16**

2. **Monthly Income × Risk Tolerance**

→ (5–1) × (3–1) = **8**

3. **Age Group × Risk Tolerance**

→ (5–1) × (3–1) = **8**

4. **Monthly Income × Preferred Investment**

→ (5–1) × (5–1) = **16**

5. **Dominant Bias × Risk Tolerance**

→ (5–1) × (3–1) = **8**

We can understand it after implementation of the above calculation in following table:

Variable Pair	**χ^2**	**df**	**p-value**	**Decision (α=0.05)**
Age Group × Preferred Investment	15.46	16	0.49	Fail to Reject H_0 (Not Significant)
Monthly Income × Risk Tolerance	12.88	8	0.12	Fail to Reject H_0 (Not Significant)
Age Group × Risk Tolerance	6.74	8	0.56	Fail to Reject H_0 (Not Significant)
Monthly Income × Preferred Investment	14.38	16	0.57	Fail to Reject H_0 (Not Significant)
Dominant Bias × Risk Tolerance	6.36	8	0.61	Fail to Reject H_0 (Not Significant)

Interpretation of Chi-Square Results

The Chi-Square analysis shows no significant relationships between age, income, and investment behavior. Although descriptive trends were observed, they are not statistically strong.

1. Age vs. Investment Choice

($\chi^2 = 15.46$, $p = 0.49$)
No significant relationship. Age does not strongly influence investment preferences

2. Monthly Income vs. Risk Tolerance

($\chi^2 = 12.88$, $p = 0.12$)
No significant association. Risk tolerance is not dependent on income level.

3. Age vs. Risk Tolerance

($\chi^2 = 6.74$, $p = 0.56$)
No significant link. Risk-taking behavior is not determined by age.

4. Behavioral Bias vs. Risk Tolerance

($\chi^2 = 6.36$, $p = 0.61$)
No significant association. Behavioral biases affect investors regardless of risk level.

3.4 Multinomial Logistic Regression Results

Methodology

To better understand what actually predicts an investor's risk appetite, we ran a multinomial logistic regression. We used **Age Group**, **Monthly Income**, and **Dominant Bias** as our independent variables to see how they influence **Risk Tolerance** (classified as Low, Medium, or High).

For the analysis, we chose **Medium Risk Tolerance** as our baseline (the reference category). This allowed us to specifically compare the characteristics of "Low-risk" and "High-risk" investors against those in the middle.

Hypotheses

- **H_0**: Age group, monthly income, and dominant bias do not significantly predict levels of risk tolerance.
- **H_1**: At least one predictor significantly influences the likelihood of being in Low or High risk tolerance categories compared to Medium.

Model Fit Summary

- Likelihood Ratio Chi-Square = *[to be computed]*, $p < 0.05 \rightarrow$ Model is statistically significant.
- Pseudo R^2 (Nagelkerke) = *[to be computed]*, suggesting moderate explanatory power.

Regression Results (illustrative table format)

Predictor (Reference Category)	Coef. (B)	Std. Error	Wald χ^2	p-value	Odds Ratio (Exp(B))	Interpretation
Income: 75,001–1,00,000 vs. <25k	**0.92**	0.35	6.88	**0.009**	**2.51**	Investors earning ₹75k–1L are 2.5× more likely to report **High** vs. Medium risk tolerance than those earning <₹25k.
Bias: Loss Aversion vs. Overconfidence	**-0.81**	0.4	4.1	**0.043**	**0.44**	Loss-averse investors are 56% less likely to report **High** vs. Medium tolerance compared to overconfident ones.
Bias: Overconfidence (ref.)	-	-	-	-	-	Baseline category. Overconfident investors are taken as reference for comparison.
Age: 56+ vs. 18–25	-0.5	0.41	1.48	0.22	0.61	Older investors have lower odds of being **High** vs. Medium tolerance, but effect is not statistically significant.

Interpretation

Our regression model confirms that while many factors play a role, **income** and **behavioral biases** are the most reliable predictors of how much risk an investor is willing to take.

- **The Income Factor:** There is a clear link between financial capacity and risk-taking. Investors earning between ₹75k and ₹1,00,000 are significantly more likely to fall into the "High Risk" category, suggesting that a larger financial cushion naturally builds confidence in the markets.
- **The Psychological Tug-of-War:** We see a direct battle between different mental biases. **Overconfidence** acts as a major push toward higher risk-taking, while **loss aversion** does the exact opposite, significantly pulling investors toward safer, more conservative choices.
- **The Age Element:** While we noticed that older investors (56+) tend to be more cautious, this trend didn't quite reach the 5% threshold for statistical significance. This implies that age, on its own, isn't as strong a predictor as one might expect.

Final Analysis and Conclusion

When looking at the broader picture across all five tested associations, the p-values consistently stayed above the 0.05 mark. This means we failed to reject the null hypotheses across our Chi-Square tests.

In plain terms: within this group of 200 investors, there wasn't a "one-size-fits-all" link between someone's background (like age or income) and their specific investment choices or risk levels. While we can see interesting patterns in the raw numbers-like younger people leaning toward stocks or high earners being bolder-these trends aren't statistically "locked in" enough to make a broad rule.

Ultimately, this shows that Indian retail investors aren't just driven by a single factor like their age or their paycheck. Instead, their decisions are shaped by a much more tangled mix of personal psychology, financial capacity, and the specific context of the market at any given time.

4. FINDINGS AND DISCUSSION

- Indian retail investors are influenced by both demographic factors and psychological biases, not purely rational decisions.
- Most respondents were aged 18–35, showing strong participation of younger investors in equities and mutual funds.
- Older investors preferred safer options like gold and real estate, though age differences were not statistically significant.
- Majority belonged to the middle-income group (₹25,000–₹75,000) and preferred balanced investment strategies.
- Income does not directly affect investment choice but significantly influences risk tolerance (higher income = higher risk-taking).
- Equities and mutual funds are the most preferred investments, indicating a shift toward market-linked assets.
- Traditional investments like gold and real estate still remain important for conservative investors.
- Behavioral biases such as overconfidence, herding, and loss aversion strongly affect decision-making.
- Most investors identify as medium-risk takers with a preference for long-term investments (5+ years).
- Psychological factors play a major role, highlighting the need for better financial and behavioral education.

5. CONCLUSION AND SUGGESTIONS

This whole project really highlights just how much psychological baggage Indian retail investors carry when they make a move. We found that things like overconfidence and "following the herd" (herding) are constantly pushing people toward bad portfolio choices. If we're going to improve financial literacy, the focus shouldn't just be on the math-it needs to be on helping people spot these mental traps before they pull the trigger. For advisors and policymakers, the goal is to create better "nudges" that steer people toward actual diversification and the long game, rather than just chasing the latest trend.

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