

RESEARCH ARTICLE

IMPACT OF BEHAVIORAL BIASES ON INVESTMENT DECISIONS OF WOMEN INVESTORS: A PLS-SEM AND IPMA APPROACH

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Abstract: This cross-sectional study examines the role of behavioral biases in shaping investment decision-making among women investors through an integrated behavioral framework. Using survey data and drawing on Prospect Theory, Bounded Rationality, and the Theory of Planned Behavior (TPB), the research explores how heuristic-driven biases influence financial decisions-making. Specifically, the study investigates the impact of heuristics on behavioral biases, including prospect-related bias and herding behavior on investment decision-making. The primary data was collected from women investors using a structured questionnaire and analyzed using PLS-SEM and IPMA. The herding bias significantly influences investment decision-making among women investors refers to the phenomenon that occurs when individuals mimic the actions of others rather than relying on their own analysis, leading to possibly irrational investment decisions. The findings reveal that herding bias significantly influences investment decision-making among women investors refers to the phenomenon that occurs when individuals mimic the actions of others rather than relying on their own analysis, leading to possibly irrational investment decisions. Similarly, heuristics significantly influence behavioral biases, which in turn shape key components of decision-making. Furthermore, prospect-related bias also affects attitudes toward investment. The study contributes to the behavioral finance literature by integrating cognitive and psychological into a unified framework and providing a gender-specific understanding of investment behavior. The findings offer valuable insights for policymakers and financial practitioners in designing targeted interventions and strategies to enhance rational investment decision-making among women investors.

Keywords: *Herding bias, Investment decisions, PLS-SEM, Women investors, IPMA, Prospect bias and Heuristic bias.*

Article Received: 20 March 2026

Revised: 05 April 2026

Accepted: 10 April 2026

INTRODUCTION

Behavioural biases in women investors are influenced by different factors, including women's personality and demographic variables. These biases can significantly impact investment decisions, often leading to irrational behavior that deviates from logical financial decision-making. Understanding these biases is crucial for developing strategies to mitigate their effects and improve investment outcomes for women investors. Women may face biases in evaluations of their investment decisions due to their perceptions of competence and risk aversion (Barber and Odean, 2001).

Gender influences financial risk-taking behavior under time pressure, with women showing greater risk aversion and susceptibility to decision biases such as loss aversion and anchoring compared to men (Xie, Page, and Hardy, 2019). Gender bias affects investment decisions, potentially discouraging women from participating in investment activities (Niessen-Ruenzi & Ruenzi, 2019). Thus, Women investors, like their male counterparts, are susceptible to various behavioral biases such as overconfidence, herding, and loss aversion.

However, the degree and impact of these biases on investment decision-making can differ based on gender (Jain et al., 2020; Zahera & Bansal, 2018). Women investors tend to exhibit stronger anchoring bias than men, making them more influenced by irrelevant reference points in financial decision-making (Mahapatra et al., 2015). Herding bias, in which investors follow the actions of others rather than relying on their own analysis, is a significant factor influencing investment decisions.

This bias can be particularly strong during periods of market volatility, affecting both male and female investors (Jain et al., 2019; Talwar et al., 2021). Younger and less experienced investors may exhibit stronger biases due to a lack of familiarity with market dynamics (Saivasan & Lokhande, 2022).

Thus, gender differences in different types of biases influence overall portfolio management and risk tolerance, so it is necessary to recognize the impact of these biases on investment decisions to modify financial advice and to help financial advisors and policymakers in designing better investment alternatives and strategies that cater to the unique behavioural tendencies of women investors. Thus, the background of the research problem addressed in the current study, as well as the research gap and study objectives, are covered in depth in the first section (the introduction). The theoretical foundation and development of the study's hypotheses are presented in the second section.

The study's materials and methods are described in the third section, while the fourth portion presents the analysis and findings. Additionally, these findings are examined and discussed in the fifth section, while the contribution of the study and limitations of the study are presented in the sixth section respectively.

LITERATURE REVIEW

This section provides an in-depth review of research on behavioral biases and how they affect female investors' investment choices. It summarizes the thorough academic work of numerous studies and provides insightful information about the ways women make decisions in a variety of markets and situations.

Review of Prior Studies on Behavioral Biases and Investment Decision-Making

Prior research in behavioral finance has consistently highlighted the significant role of cognitive biases in shaping investment decision-making. Early work by Victor Ricciardi and Helen K. Simon (2000) established that irrational investor behavior arises from heuristics and biases such as overconfidence, cognitive dissonance, regret, and insights from Prospect Theory. Empirical studies further reinforce these findings.

For instance, Waweru et al. (2008) demonstrated that institutional investors are influenced by multiple behavioral factors, while Onsomu (2014) identified a positive relationship between biases such as availability, confirmation, and representativeness with investment decisions, with limited gender influence.

Similarly, Kengatharan and Kengatharan (2014) found that herding, heuristics, prospect, and market factors significantly influence investor behavior, with varying levels of impact. Subsequent studies across different markets have consistently reported that biases such as overconfidence, anchoring, risk aversion, and loss aversion significantly affect investment decisions (Raja Rehan & Umer, 2017; Niyoyita et al., 2017; Chhapra & Kashif, 2018).

Further, research has explored the relationship between rationality and behavioral biases, indicating that investors often deviate from rational decision-making due to cognitive limitations and psychological influences (Kumar & Goyal, 2016; Mushinada & Veluri, 2018). Extending this perspective, Raut Kumar et al. (2018) integrated behavioral biases within the Theory of Planned Behavior framework, confirming that biases significantly influence investment intentions. Literature reviews and meta-analyses (Satish Kumar & Goyal, 2015; Nigam & Srivastava, 2018) further emphasize the presence of behavioral anomalies and highlight gaps such as limited primary data studies and the need for deeper exploration of herding behavior.

Recent studies have also incorporated gender perspectives and advanced methodologies. Ayaa et al. (2021) found significant gender differences in risk tolerance and financial literacy, while Gautam and Wadhwa (2022) highlighted that risk behavior negatively

affects financial decision-making among working women. Bibliometric and review-based studies (Jain et al., 2021) suggest emerging research directions, including cross-country analysis and technological interventions to mitigate biases. Overall, the literature consistently demonstrates that behavioral biases, driven by heuristics and psychological factors, play a crucial role in investment decision-making, with growing emphasis on gender-specific dynamics and the integration of behavioral theories.

Theoretical Perspective: Heuristics as a Second-Order Construct and Investment Decision-Making

The proposed framework is grounded in the principles of *Behavioral Finance Theory*, which departs from the traditional assumption of rational investors by emphasizing the role of cognitive biases, emotions, and social influences in financial decision-making Behavioral Finance.

Behavioral finance suggests that investors often rely on mental shortcuts, or heuristics, while making complex financial decisions under uncertainty, leading to systematic deviations from rational behavior (Ricciardi & Simon, 2000; Kumar & Goyal, 2015; Zahera & Bansal, 2018). Within this paradigm, heuristics are conceptualized as a higher-order construct that captures patterns of bounded rationality influencing investor behavior (Sadeeq & Butt, 2024; Mittal, 2022).

At the core of this framework lies the concept of bounded rationality, which posits that individuals operate under cognitive limitations, incomplete information, and time constraints while making financial decisions (Ricciardi & Simon, 2000; Kumar & Goyal, 2016). Consequently, investors adopt heuristics as adaptive decision-making strategies; however, these shortcuts may also generate predictable biases that affect investment outcomes (Kahneman & Tversky's behavioral assumptions as discussed in Kumar & Goyal, 2015; Jain et al., 2021). In this study, heuristics are modelled as a higher-order construct comprising two major dimensions: Prospect Theory bias and Herding Behavior. The first dimension, Prospect Theory, is treated as a lower-order construct encompassing biases such as loss aversion, reference dependence, and diminishing sensitivity. Prospect Theory

explains that investors evaluate gains and losses asymmetrically, with losses exerting a stronger psychological impact than equivalent gains (Arora & Kumari, 2015; Armansyah, 2021; Gupta & Shrivastava, 2022).

This bias significantly influences risk-taking and portfolio decisions, particularly among women investors, who are generally found to exhibit greater risk aversion and sensitivity toward financial losses (Sarin & Wieland, 2016; Xie et al., 2017; Ayaa & Peprah, 2021). Studies have shown that loss aversion and regret-related emotions strongly affect women's financial decision-making processes and investment preferences (Arora & Kumari, 2015; Shah & Malik, 2021).

The second dimension of heuristics is Herding Behavior, which reflects the tendency of investors to imitate the actions and decisions of others due to uncertainty, information asymmetry, or limited financial knowledge (Waweru et al., 2008; Feng & Seasholes, 2018; Gupta & Shrivastava, 2022). Herding is influenced by both informational and social pressures, where investors rely on peer opinions, expert recommendations, or prevailing market sentiment instead of conducting independent analysis (Komalasari & Asri, 2019; Zheng et al., 2021).

Among women investors, herding behavior may become more pronounced in environments characterized by lower financial confidence or limited market exposure, leading to dependence on collective behavior while making investment decisions (Shaikh et al., 2019; Gautam et al., 2022). Prior studies have also identified gender-based differences in susceptibility to herding and investment biases (Onsomu, 2014; Yuliawati et al., 2021).

These dimensions collectively represent the broader concept of heuristics under behavioral finance, integrating both cognitive evaluation mechanisms (prospect-related biases) and social influence mechanisms (herding tendencies). Such a hierarchical

structure aligns with contemporary behavioural finance modelling approaches, where complex psychological constructs are represented through multi-level latent variables (Jain et al., 2021; Bihari et al.,

2022; Paul & Sundaram, 2023). Empirical evidence consistently supports the argument that behavioral biases significantly shape investor decisions across different demographic and market contexts (Aigbovo & Ilaboya, 2019; Kartini & Nahda, 2021; Abideen et al., 2023).

Together, these behavioral dimensions influence how women investors interpret financial information, perceive risk, and evaluate investment opportunities, ultimately shaping their investment choices. The integration of heuristics into the investment decision-making framework highlights that women's investment behavior is not purely rational but is substantially influenced by psychological and social factors (Madaan & Singh, 2019; Shaji & Uma, 2023; Shunmugasundaram & Sinha, 2025). This theoretical foundation therefore provides a comprehensive explanation of women investors' financial behavior within the broader domain of behavioral finance.

Research Gaps and Hypotheses Development

Although research on behavioral biases and investment decisions has expanded considerably in recent years, a significant gap still exists regarding women investors and the manner in which behavioral biases influence their long-term wealth accumulation and investment decisions. Existing literature has largely focused on general investors without adequately addressing gender-specific behavioral patterns in financial decision-making (Shaikh et al., 2019; Gautam et al., 2022; Ayaa & Peprah, 2021).

Prior studies have predominantly examined individual biases in isolation, such as overconfidence, loss aversion, or herding, rather than adopting a comprehensive framework that integrates multiple behavioral dimensions simultaneously (Kumar & Goyal, 2015; Zahera & Bansal, 2018; Paul & Sundaram, 2023). Consequently, limited empirical evidence exists regarding the combined influence of prospect bias, herding behavior, and heuristic-driven decision-making on women investors' investment choices. Moreover, earlier studies have primarily concentrated on understanding behavioral biases among

general retail investors, institutional investors, or stock market participants without specifically investigating women investors as a distinct demographic group (Waweru et al., 2008; Aigbovo & Ilaboya, 2019; Kartini & Nahda, 2021). Although some studies acknowledge gender differences in financial behavior, they often fail to comprehensively explain how psychological and social biases interact to shape women's investment decisions (Onsomu, 2014; Yuliawati et al., 2021; Xie et al., 2017).

In particular, limited studies have explored how women investors perceive financial risk and how such perceptions mediate the relationship between behavioral biases and investment decision-making (Mehta et al., 2022; Kurnijanto et al., 2022; Srivastava et al., 2024). Another important limitation identified in the literature is the lack of integrated models that simultaneously examine multiple behavioral biases along with mediating and moderating mechanisms.

Most existing studies have tested direct relationships between biases and investment decisions, while comparatively fewer studies have incorporated behavioral constructs such as risk perception, financial literacy, or financial risk tolerance as explanatory mechanisms (Hayat & Anwar, 2016; Adil et al., 2022; Mahmood et al., 2024).

Therefore, the present study addresses this limitation by adopting a comprehensive framework that simultaneously examines prospect bias, herding behavior, and heuristic bias while also considering the role of risk perception in shaping women investors' investment decisions.

Furthermore, the review of prior literature indicates that much of the empirical evidence has been generated in developed economies, whereas limited attention has been given to emerging markets such as India, where socio-cultural, financial literacy and gender-related factors may influence investment behavior differently (Suresh, 2021; Gupta & Shrivastava, 2023; Shahzad et al., 2024).

Women investors in emerging economies often face unique financial challenges, including lower financial confidence, limited access to financial knowledge, and greater dependence on informal information sources,

which may intensify behavioral biases in investment decision-making (Komalasari & Asri, 2019; Shaikh et al., 2019; Gautam et al., 2022). Despite these contextual differences, empirical studies focusing specifically on Indian women investors remain scarce.

Therefore, a comprehensive investigation incorporating the major behavioral biases-prospect bias, herding behavior, and heuristic bias-along with the examination of mediating and moderating mechanisms in the context of women investors is essential. By addressing these gaps, the present study seeks to contribute to the growing body of behavioral finance literature and provide practical insights for policymakers, financial advisors, and institutions in designing gender-inclusive investment strategies and targeted financial literacy initiatives aimed at improving women's financial well-being and investment participation. Based on these identified research gaps, the following hypotheses are proposed:

H 1: Heuristic bias in women investors significantly influences their investment decision making.

H2: Prospect bias in women investors significantly influences their investment decision making.

H3: Herding bias in women investors significantly influences their investment decision making.

RESEARCH METHODOLOGY

The structural model in the study is developed for hypothesis testing and examined using the SEM and IPMA approach. The model incorporates the impact of selected behavioral biases on the investment decisions of women investors. The study considers three major behavioral biases: heuristic bias, prospect bias, and herding bias as exogenous constructs and investment decision-making is treated as the endogenous construct, assessed through relevant reflective measures.

Sampling and Data Collection

Primary and cross-sectional data were collected for this study.

The data are primary in nature as they were obtained directly from women investors who

make their investment decisions across the NCR region of Haryana. Primary data were collected through a structured survey method using an adapted questionnaire as the instrument of data collection.

Both physical copies and Google forms of the questionnaire were circulated across different social media platforms, and only the responses fulfilling the selection criteria were included in the final analysis. The data are also cross-sectional in nature, as they were collected within a short period of time, from April 2024 to September 2024, to capture the behavioral biases and investment decision-making patterns of women investors.

Research Instrument

The questionnaire was developed in several stages. The first draft questionnaire was adapted from the existing literature. The items were identified from multiple research papers. The draft questionnaire was discussed with subject experts and the guide. The questionnaire was modified as per the discussions and suggestions provided by the subject experts and the guide. After ensuring the reliability and content validity of the questionnaire through the expert's validation of the questionnaire, the pilot survey is also conducted in order to ensure the face validity. The pilot survey results were examined, and the questionnaire was slightly modified. The final modified questionnaire was used for final data collection in order to achieve the framed objectives and hypothesis testing.

Data Analysis

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the relationships among heuristics, behavioral biases (prospect bias and herding behavior), components of the Theory of Planned Behavior and women's investment decision-making. PLS-SEM is appropriate due to its suitability for complex models, predictive orientation, and ability to handle non-normal data and relatively small sample sizes.

This study used a combination of qualitative and quantitative research methods. The study is qualitative as it identifies and explains the behavioral biases that affect women investors' decision-making, with the help of a systematic literature review approach. It is quantitative in nature as it adopts a descriptive research design because

the research problem, objectives, and hypotheses are clearly defined. This study examines the relationship between behavioral biases, such as overconfidence, loss aversion, herding, regret aversion, and availability bias, and investment decisions.

RESULTS

Descriptive Analysis

Descriptive analysis was conducted to summarize the demographic profile of respondents and the basic characteristics of the study variables. The demographic profile of respondents indicates a diverse representation of women investors across age, income, education, and occupation categories.

A majority of respondents (50.7%) belong to the 0–30 years age group, followed by 31.0% in the 31–45 years category and 18.4% aged 46 years and above, suggesting that younger investors constitute a significant portion of the sample. In terms of income, most respondents (63.8%) fall within the ₹1 to ₹10, 00,000 bracket, while 33.2% earn between ₹10,00,001 and ₹20,00,000, and only 3.0% belong to the highest income category, indicating a predominance of middle-income investors. Regarding educational qualifications, 35.7 % of respondents are postgraduates, 33.3 % are graduates, and 31.0 % hold professional qualifications, reflecting a well-educated sample.

Occupational distribution shows that 33.7 % of respondents are employed in the government sector, followed by 29.4 % who are self-employed, 18.7 % in the private sector, and 18.3 % categorized as retired or others. Overall, the sample reflects a balanced and diverse group of women investors, enhancing the reliability and generalizability of the study findings.

PLS-SEM Analysis

In the study, the three behavioural biases were included in the structural model, namely the heuristic bias, prospect bias, and herding bias. The heuristic bias is assumed as a second-order construct and measured with the help of five individual biases, namely anchoring bias, availability bias, Gambler's fallacy, overconfidence bias, and representative bias. Similarly, the Prospect bias is also a second-order construct and measured with the help of five individual biases, namely loss aversion bias, mental accounting bias, and regret bias. The third independent behavioural bias is herding bias, which is a lower-order construct. These three biases are assumed to influence the investment decision-making of the women investors. The structural model is shown below in the figure. The following hypotheses are examined with the help of the SEM PLS approach using SmartPLS 04 software:

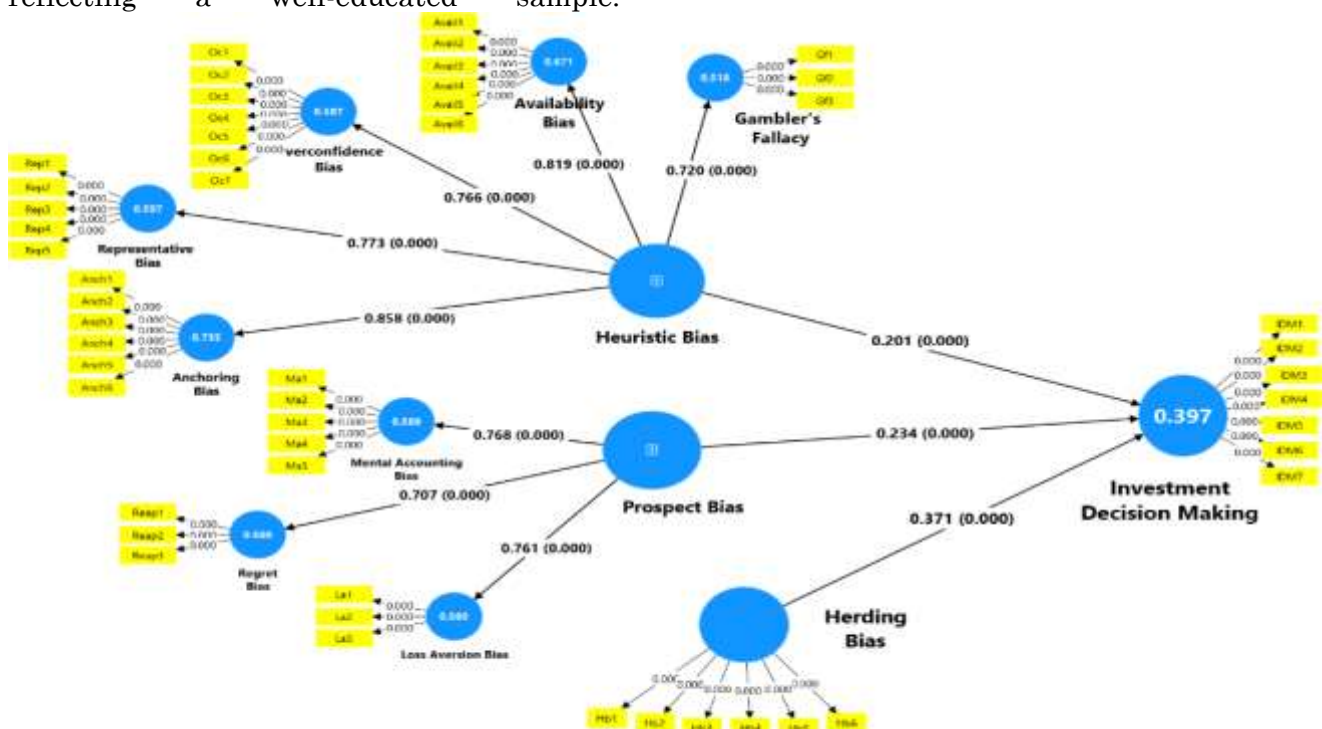


Figure 1: Measurement model

Measurement Model Assessment

This section of the research study discusses the results of the different assumptions examined with the collected responses from women investors against the statements measuring the behavioral biases and investment decision-making included in the research instrument. The 'reliability analysis,' construct (convergent and discriminant) validity, 'item multicollinearity,' and 'common method bias (CMB) were assessed.

The internal consistency reliability of the included factor represents the correlation among the indicators used to measure the factor in the scale. The internal consistency reliability of the included factors in the study influencing the investment decisions of women investors is examined with the help of Cronbach's alpha. The expected value of the Cronbach alpha for each factor included in the scale is greater than 0.7. The results of the reliability analysis for the factors included in the scale found that the Cronbach alpha of all the factors is greater than 0.7, indicating that the internal consistency reliability of the factors included in the measurement scale is ensured.

The items included in the measurement scale are not supposed to be duplicates of each other, else the problem of redundancy and

multicollinearity occurs. The multicollinearity of the items is examined with the help of the variance inflation factor. The VIF value for each item is expected to be less than 0.5. The results of item multicollinearity are reported in the table. The results reported that the VIF values of all the included items in the measurement scale are found to be less than 5, indicating the absence of a multicollinearity problem in the measurement scale.

The presence of bias in the responses leads to biased conclusions in the research study, which will not be accepted. Thus, the presence of bias in the responses received in the study is examined with the help of Harman's single-factor method. The Harman single factor explains the proportion of variance of the factors taken together with the help of one single factor.

The EFA is applied to estimate the value of a single factor. The study reported that only 26.936 percent of the variability of the entire factors included in the measurement scale is explained by the common factor. Since the estimated value of 26.936 % is less than the required cut-off value of 50%, the responses received in the study are free from common method bias, and the conclusions made in the research study are, thus, free from the bias. The results are presented in Tables 1.

Table 1: Reliability analysis and convergent validity

	Construct loadings	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)	VIF
Anch1	0.903	0.915	0.914	0.643	3.479
Anch2	0.754				2.207
Anch3	0.673				2.505
Anch4	0.860				2.634
Anch5	0.769				3.250
Anch6	0.829				3.137
Avail1	0.782	0.893	0.892	0.580	2.689
Avail2	0.721				2.094
Avail3	0.840				2.162
Avail4	0.768				2.926
Avail5	0.779				3.256
Avail6	0.668				2.597
Gf1	0.666	0.811	0.802	0.580	2.539
Gf2	0.685				2.616

Gf3	0.909				1.391
Hb1	0.652	0.887	0.884	0.563	1.922
Hb2	0.733				2.589
Hb3	0.772				2.446
Hb4	0.652				2.222
Hb5	0.784				2.105
Hb6	0.882				2.037
IDM1	0.721	0.890	0.891	0.542	2.054
IDM2	0.600				1.702
IDM3	0.737				2.396
IDM4	0.833				2.877
IDM5	0.689				2.145
IDM6	0.794				2.572
IDM7	0.757				1.658
La1	0.696	0.774	0.780	0.544	2.074
La2	0.845				2.005
La3	0.659				1.317
Ma1	0.646	0.876	0.865	0.570	3.068
Ma2	0.779				2.849
Ma3	0.663				3.299
Ma4	0.642				2.156
Ma5	0.986				1.838
Oc1	0.765	0.912	0.910	0.594	2.448
Oc2	0.874				2.517
Oc3	0.721				2.235
Oc4	0.856				2.481
Oc5	0.723				3.498
Oc6	0.689				2.613
Oc7	0.747				2.723
Reg1	0.721	0.834	0.834	0.628	1.985
Reg2	0.733				2.029
Reg3	0.909				1.815
Reap1	0.865	0.890	0.888	0.617	2.425
Reap2	0.903				2.528
Reap3	0.701				2.689
Reap4	0.644				2.925
Reap5	0.785				3.005

The construct validity of the measurement scale consisting of the factors influencing the investment decisions of women investors who participated in the study is examined with the help of the CFA method. The construct validity of the measurement scale used in the study is examined wrt two different components, namely convergent validity and

discriminant validity. The convergent validity examines the relationship between the indicators with their respective factors and is examined with the help of construct loadings, composite reliability, and average variance extracted. In convergent validity of the measurement scale is ensured if the construct loadings of the majority of the

items are greater than 0.7, CR is greater than 0.7, and AVE is greater than 0.5. The discriminant validity of the measurement scale is examined by the cross-correlations between the indicators of different factors and is expected to be moderate or low. The discriminant validity of the scale is examined with the help of the HTMT ratio and Fornell-

Larcker criteria. The HTMT ratio is expected to be less than 0.8 for each pair of different factors. The Fornell-Larcker compares the square root of each factor with its correlation with the remaining factors and is expected to be higher. The results are presented in Table 2 and 3.

Table 2: HTMT ratio for discriminant validity

	Anchoring Bias	Availability Bias	Gamble fallacy Bias	Herding Bias	Investment Decision Making	Loss Aversion Bias	Mental Accounting Bias	Overconfidence Bias	Regret Aversion Bias	Representative Bias
Anchoring Bias (ANCH)										
Availability Bias (AVAIL)	0.792									
Gamble fallacy Bias (GF)	0.673	0.729								
Herding Bias (HB)	0.306	0.268	0.360							
Investment Decision Making (IDM)	0.329	0.340	0.480	0.620						
Loss Aversion Bias (LV)	0.241	0.199	0.359	0.577	0.662					
Mental Accounting Bias (MA)	0.165	0.100	0.253	0.478	0.308	0.382				
Overconfidence Bias (OB)	0.526	0.444	0.455	0.251	0.311	0.260	0.105			
Regret Aversion Bias (REG)	0.106	0.080	0.304	0.374	0.321	0.571	0.282	0.110		
Representative Bias (REAP)	0.571	0.499	0.485	0.241	0.280	0.235	0.080	0.739	0.080	

Table 3: Fornell - Larcker Criteria for Discriminant Validity

	Anchoring Bias	Availability Bias	Gamble Fallacy Bias	Herding Bias	Investment Decision Making	Loss Aversion Bias	Mental Accounting Bias	Overconfidence Bias	Representative Bias	Representative Bias
Anchoring Bias (ANCH)	0.802									
Availability Bias (AVAIL)	0.786	0.762								
Gamble Fallacy Bias	0.650	0.703	0.762							
Herding Bias	0.309	0.271	0.364	0.750						
Investment Decision Making	0.332	0.343	0.489	0.625	0.736					
Loss Aversion Bias	0.238	0.200	0.369	0.566	0.656	0.738				

Mental Accounting Bias	0.170	0.106	0.269	0.481	0.318	0.367	0.755			
Overconfidence Bias	0.521	0.442	0.449	0.255	0.312	0.259	0.109	0.771		
Regret Aversion	0.104	0.082	0.319	0.377	0.320	0.587	0.281	0.113	0.793	
Representative Bias	0.555	0.490	0.466	0.246	0.283	0.233	0.082	0.734	0.082	0.786

The statistical fitness of the measurement model is also examined with the help of SRMR and NFI estimates as presented in Table 4. The result reported that the SRMR estimate of the measurement model is 0.065, which is less than the required value of 0.08.

Further, the NFI estimate of the model is 0.878, which is greater than the required value of 0.8. Thus, it can be concluded that the measurement model measuring the different factors indicated that the behavioural biases in women investors and their decision-making are statistically fit.

Table 4: Model fit

Fitness Index	Saturated model	Estimated model
SRMR	0.065	0.065
d_ULS	6.945	6.945
d_G	2.503	2.503
Chi-square	13659.421	13659.421
NFI	0.878	0.878

Structural Model Assessment

The structural model in the study is developed for hypothesis testing and examined using the SEM approach. The model incorporates the impact of selected behavioral biases on the investment decisions of women investors. The study considers three major behavioral biases: heuristic bias,

prospect bias, and herding bias as exogenous constructs, each measured through statements and treated as lower-order reflective constructs. Investment decision-making is treated as the endogenous construct, assessed through relevant reflective measures. The results are presented in Table 5.

Table 5: Hypothesis testing: behavioral biases on investment decision-making

Table 8: Hypothesis testing: Behavioral biases on investment decision making						
Hypothesis Testing	Endogenous Construct	Path Coefficient	Standard Error	T statistics	P values	Result
Herding Bias	Investment Decision-Making	0.373	0.035	10.473**	0.000	Supported
Heuristic Bias		0.200	0.028	7.124**	0.000	Supported
Prospect Bias		0.235	0.034	6.913**	0.000	Supported
	Second-order measurement model					
Heuristic Bias	Anchoring Bias	0.858	0.010	85.612**	0.000	
Heuristic Bias	Availability Bias	0.820	0.012	68.345**	0.000	
Heuristic Bias	Gambler's Fallacy	0.720	0.017	43.061**	0.000	
Heuristic Bias	Overconfidence Bias	0.767	0.017	44.863**	0.000	
Heuristic Bias	Representative Bias	0.773	0.015	50.632**	0.000	
Prospect Bias	Loss Aversion Bias	0.762	0.019	40.995**	0.000	
Prospect Bias	Mental Accounting Bias	0.768	0.021	35.905**	0.000	
Prospect	Regret Bias	0.707	0.020	36.214**	0.000	

Bias						
Prospect Bias	Representative Bias	0.707	0.020	36.008**	0.000	

The result of the SEM analysis supported the hypothesis that “Heuristic bias in women investors significantly influences their investment decision making” The path coefficient indicating the influence of heuristic bias in women investors on their investment decision making is found to be positive and statistically significant (path coefficient = 0.000, t-statistic = 7.124).

Thus, it can be concluded that heuristic biases, such as anchoring bias, availability bias, gambler’s fallacy, overconfidence bias, and representativeness bias, had a significant impact on the investment decisions of women investors. Further, “Prospect bias in women investors significantly influences their investment decision making.” The path coefficient indicating the influence of prospect bias in women investors on their investment decision making is found to be positive and statistically significant (path coefficient = 0.235, t-statistic = 6.913).

Thus, it can be concluded that prospect bias, a component of behavioural finance, significantly influences investment decision-making among women investors that including biases as loss aversion, mental accounting, and regret. Moreover, “Herding bias in women investors significantly influences their investment decision making.”

The path coefficient indicating the influence of herding bias in women investors on their investment decision making is found to be positive and statistically significant (path coefficient = 0.373, t-statistic=10.473). Thus, it can be concluded that herding bias significantly influences investment decision-making among women investors refers to the phenomenon that occurs when individuals mimic the actions of others rather than relying on their analysis, leading to possibly irrational investment decisions.

IMPA

The investment decision-making of women investors is found to be influenced by three major categories of behavioural bias, namely Herding Bias, Heuristic Bias, and Prospect

Bias, as also discussed above in hypothesis testing. However, the relative influence of the included behavioural bias is also examined using the IPMA approach, where the “importance” and “performance” dimensions for the relationship between the included behavioural bias and investment decision making of women investors is discussed together and presented in Table 6.

The performance analysis in the IPMA approach represents the “level of agreement” of the women investors towards the included behavioural bias, and the importance analysis represents the impact of the included behavioural bias on investment decision-making of women investors. The agreement analysis in IMPA depicts the average agreement level of women investors on a scale of 1 to 100 for all behavioural biases influencing investment decision-making of women investors.

A higher performance indicator indicates a higher level of women investors. On the other hand, importance analysis explains the impact of different behavioural biases on investment decision-making of women investors as a dependent construct. The results of the IPMA applied in the study are shown in Figure. The IPMA diagram indicates the influence of selected behavioural biases on investment decision-making of women investors, as shown on the x-axis and the level of agreement towards the included behavioural biases on the y-axis.

The diagram also shows the x- and y-coordinates of different behavioural biases. Concerning importance analysis, “**herding bias**” (path coefficient = 0.371) has the maximum influence on investment decision making of women investors, followed by “**Prospect Bias**” on investment decision making of women investors (path coefficient=0.234) and **Heuristic Bias** (path coefficient = 0.201) is found to have the least influence, however significant, on behavioural bias on investment decision making of women investors. On the other hand, women investors were found to have the highest agreement with the Herding Bias (67.487), followed by Heuristics Bias

(66.058). However, in the case of prospect

bias (61.606), the level of agreement was the lowest.

Table 6: IPMA results

	Performance (Y-axis)	Importance (X-axis)
Herding Bias	67.487	0.371
Heuristic Bias	66.058	0.201
Prospect Bias	61.606	0.234

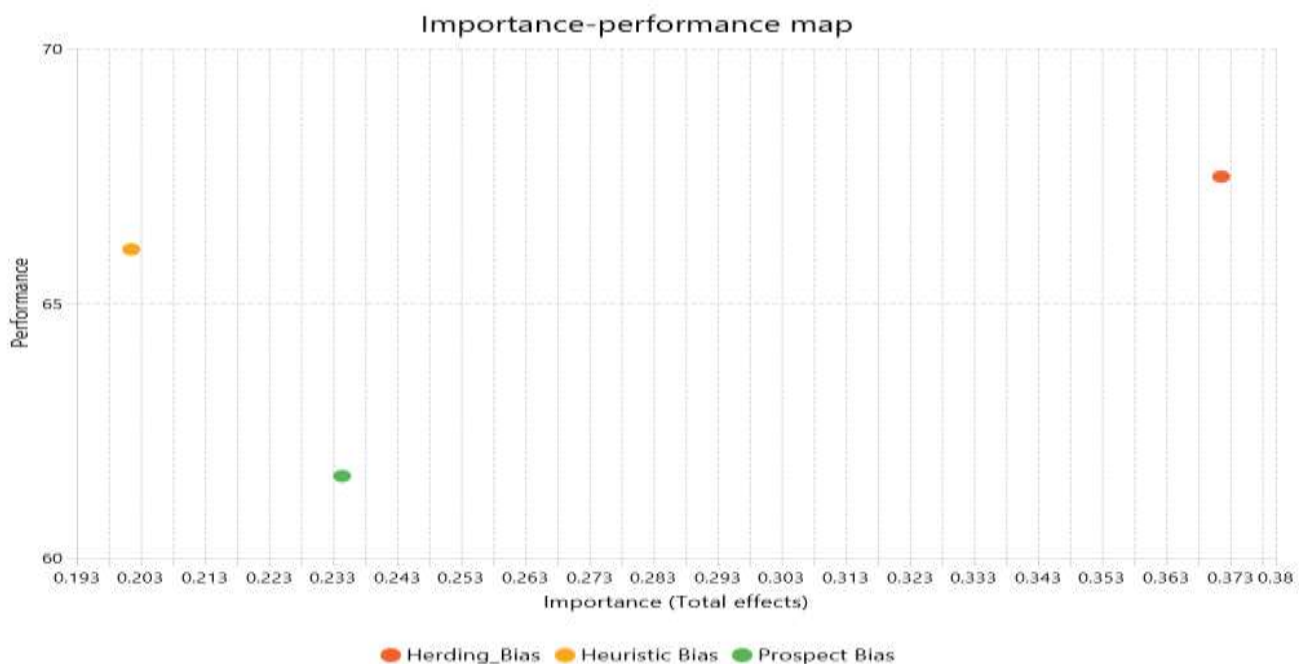


Figure 2: IMPA

DISCUSSION

This study examined how heuristic-driven biases shape women's investment decision-making through a behavioral framework integrating Prospect Theory, Bounded Rationality, and the Theory of Planned Behavior. The findings provide a coherent explanation of how cognitive shortcuts translate into actual financial decisions among women investors (Ricciardi & Simon, 2000; Kumar & Goyal, 2015; Mittal, 2022).

First, the results indicate that heuristics significantly influence behavioral biases, supporting the premise of bounded rationality that individuals rely on simplified decision rules under conditions of uncertainty and limited information (Ricciardi & Simon, 2000; Kumar & Goyal, 2016). This reinforces the argument that investors do not behave as fully rational agents; rather, they depend on cognitive shortcuts that systematically shape their judgments and investment choices (Jain et al., 2021; Sadeeq & Butt, 2024).

The findings are consistent with prior behavioral finance studies emphasizing that heuristic processing is a central determinant of investor behavior in uncertain financial environments (Waweru et al., 2008; Madaan & Singh, 2019). Second, the study highlights the significant role of prospect-related biases in shaping investment preferences. Consistent with prospect theory, investors' sensitivity toward losses and perceived financial risks significantly influences the evaluation of investment opportunities (Arora & Kumari, 2015; Armansyah, 2021).

The findings suggest that women investors tend to develop cautious or risk-averse investment tendencies when confronted with uncertainty, thereby supporting the notion of loss aversion emphasized in behavioral finance literature (Sarin & Wieland, 2016; Xie et al., 2017). This outcome indicates that negative outcomes or potential losses exert stronger psychological effects than equivalent gains, ultimately affecting investment

preferences and decision quality (Gupta & Shrivastava, 2022; Shah & Malik, 2021). Third, herding behavior was found to significantly influence socially driven investment tendencies. This indicates that social influence and the tendency to imitate others' financial decisions are important drivers of investment behavior among women investors (Waweru et al., 2008; Feng & Seasholes, 2018). The findings imply that women investors often rely on peer behavior, market sentiment, expert opinions, or collective signals while making investment decisions, especially under uncertain market conditions (Komalasari & Asri, 2019; Zheng et al., 2021).

Such behavior reflects the importance of social and informational influences in shaping financial choices and aligns with existing behavioral finance studies emphasizing the role of herding in investment decision-making (Shaikh et al., 2019; Gautam et al., 2022). Fourth, the psychological and behavioral components proposed by the Theory of Planned Behavior were found to significantly influence investment decision-making (Raut et al., 2018; Shahzad et al., 2024). This confirms that investment behavior is not solely determined by objective financial information but is also shaped by psychological and social influences (Nigam et al., 2018; Shaji & Uma, 2023).

The findings extend the application of the Theory of Planned Behavior by demonstrating its relevance in explaining financial decision-making within a behavioral finance context, particularly among women investors (Gautam et al., 2022; Srivastava et al., 2024). The results suggest that favorable investment perceptions, supportive social influence, and confidence in managing investment decisions collectively enhance investment intentions and behaviors. Importantly, the study demonstrates that behavioral biases act as a critical mechanism through which heuristics influence investment decision-making (Mahmood et al., 2024; Saleem et al., 2023).

The findings reveal that heuristics indirectly shape financial decisions by influencing psychological biases such as loss aversion and herding tendencies, which subsequently affect behavioral intentions and investment outcomes (Kurnijanto et al., 2022; Wibowo et al., 2023).

This highlights the interconnected nature of cognitive, emotional, and social processes in financial decision-making.

Overall, the findings contribute to a deeper understanding of women's investment behavior by integrating cognitive, behavioral, and social dimensions into a unified framework (Paul & Sundaram, 2023; Bihari et al., 2022). The study confirms that investment decisions are the outcome of a complex interaction between mental shortcuts, psychological biases, and behavioral intentions, thereby offering a more comprehensive explanation than traditional rational decision-making models (Zahera & Bansal, 2018; Kumar & Goyal, 2015).

CONCLUSION

Women investors' investing decisions are significantly impacted by behavioral biases, which frequently result in illogical choices. Overconfidence, anchoring, loss aversion, risk aversion, herding, regret aversion, mental accounting, and prospect bias are some of the biases that might influence how women perceive and react to market data, which, in turn, can impact their investing results. The existence of these biases shows that women are subject to behavioral factors that divert them from sound financial behavior, just like men.

However, the degree and kind of these biases may vary by gender, and demography and financial risk are important factors in reducing their impact on investing decisions. It is important to understand such biases to design suitable financing strategies for women investors. The study found that heuristic biases, such as anchoring bias, availability bias, gambler's fallacy, overconfidence bias, and representativeness bias, had a significant impact on the investment decisions of women investors. Understanding these biases is significant to framing proper investment strategies for women investors.

Anchoring bias harmed investment decisions, leading women to rely too heavily on initial information, which can skew their judgment. Availability and representativeness biases had a significant influence on the investment

decisions of women investors (Srivastava et al., 2024). Gender significantly influences overconfidence, self-attribution, and regret aversion biases among retail investors (Singh, Goyal, and Kumar 2016). Women retail investors tend to show stronger anchoring bias than men, making them more influenced by irrelevant reference points in financial decision-making (Mahapatra et al., 2015).

Gender influences financial risk-taking behavior under time pressure, with women showing greater risk aversion and susceptibility to decision biases such as loss aversion and anchoring compared to men (Xie, Page, and Hardy, 2019). The study also found that prospect bias, a component of behavioural finance, significantly influences investment decision-making among women investors that including biases as loss aversion, mental accounting, and regret.

Loss aversion bias significantly differs by gender, with women investors generally showing stronger aversion to losses compared to men. The loss sensitivity often makes women more cautious and risk-averse in their investment choices and may try to avoid realizing losses by holding onto underperforming assets longer than male investors (Ferreira et al., 2019). Gender influences financial risk-taking behavior under time pressure, with women showing greater risk aversion and susceptibility to decision biases such as loss aversion and anchoring compared to men (Xie, Page, and Hardy, 2019).

Thus, gender differences in loss aversion influence overall portfolio management and risk tolerance, so it is necessary to recognize these for modifying financial advice to cater needs of a specific gender. Women and older investors have a tendency to show higher loss aversion and regret, leading to more cautious investment behaviors (Arora and Kumari, 2015).

Finally, the study found that herding bias significantly influences investment decision-making among women investors refers to the phenomenon that occurs when individuals mimic the actions of others rather than relying on their own analysis, leading to possibly irrational investment decisions.

Herding bias has a positive effect on the investment decisions of working women, following market trends or peer actions rather than independent analysis, and the socio-cultural environment often pressures women to conform to group behavior, amplifying the effects of herding bias in their investment strategies (Srivastava et al., 2024). Individual herding behavior in investments is significantly shaped by personality traits, gender, and information asymmetry (Komalasari, 2019).

Theoretical & Methodological Contribution

This study makes several important contributions to the literature on behavioral finance and investment decision-making. First, it advances the application of Prospect Theory by demonstrating how heuristic-driven biases, particularly prospect-related bias and herding behavior, shape investment decisions among women investors. By linking cognitive biases directly to risk perception and decision outcomes, the study provides a more nuanced understanding of deviations from rational investment behavior.

Second, the study extends the Theory of Planned Behavior by integrating behavioral biases into its framework. While TPB traditionally explains decision-making through attitudes, subjective norms, and perceived behavioral control, this research enriches the model by identifying heuristics and biases as key antecedents that influence these components. This integration offers a more comprehensive behavioral explanation of investment decision-making.

Third, the study contributes to the literature on Bounded Rationality by empirically illustrating how investors rely on cognitive shortcuts under conditions of limited information and complexity. By positioning heuristics as the origin of behavioral biases, the research reinforces the role of bounded rationality in financial decision contexts. Fourth, the study provides a gender-specific perspective by highlighting how women's investment decisions are shaped by behavioral and social influences.

Although prior research has examined behavioral biases broadly, limited attention has been given to women investors.

This study addresses that gap by integrating behavioral finance theories with gender-focused insights, thereby contributing to a more inclusive understanding of investment behavior.

Finally, by proposing and empirically testing an integrated framework that combines heuristics, behavioral biases, prospect theory, and TPB, this study contributes to theory-building in behavioral finance. It offers a structured pathway that explains how cognitive processes translate into actual investment decisions, thereby bridging the gap between psychological theory and financial behavior.

Practical Implications

The findings of this study offer significant implications for both policymakers and financial practitioners in enhancing rational investment decision-making among women investors. The strong influence of heuristic-driven biases indicates the need for targeted financial education programs that go beyond basic literacy and explicitly address cognitive biases such as overconfidence, loss aversion, and herding.

Such initiatives can help investors recognize and mitigate irrational tendencies, thereby improving the quality of financial decisions. Given the important role of social influence in shaping investment behavior, policymakers and institutions should promote community-based financial awareness initiatives, including peer learning platforms, women-focused investor groups, and mentorship networks.

These approaches can positively shape subjective norms and encourage more informed participation in financial markets. The significance of perceived behavioral control highlights the importance of enhancing financial confidence and accessibility. Efforts should be made to provide user-friendly financial platforms, simplified investment products, and accessible advisory services that empower women to make independent and informed decisions.

In addition, regulators can incorporate behavioral insights into financial systems through mechanisms such as simplified

disclosures, risk-labelling, and default options, which can guide investors toward more rational choices without restricting autonomy. For financial advisors and practitioners, the findings emphasize the importance of adopting a more personalized and behaviourally informed approach.

Understanding that investment decisions are influenced by attitudes, social pressures, and perceived control enables practitioners to tailor their strategies to address both cognitive and emotional aspects of decision-making. Furthermore, integrating decision-support tools such as risk assessment features, educational resources, and structured investment guidance can help investors avoid impulsive behavior and improve long-term outcomes.

Overall, these implications highlight the need for a combined effort from policymakers and practitioners to foster awareness, confidence, and disciplined investment behavior among women investors, ultimately leading to more effective and informed financial decision-making.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The study only used primary data from questionnaires, which might have added biases or errors because self-reported information is subjective. Using convenience samples could give rise to selection bias and limit the findings' applicability to a larger group of women investors. The cross-sectional research approach of this study limits the capacity to examine patterns or changes in investing behavior over time by collecting data at a particular moment in time. Another limitation is that the data were only gathered from female investors in Haryana's National Capital Region (NCR), which restricts the representativeness of the results and their relevance to women investors in other parts of India.

Additionally, the study does not completely consider factors in the context that might affect the relationship between behavioral biases and investment decisions, such as platform-specific features, technology improvements, or regulatory changes. Similarly, although these elements may interact with psychological aspects, external

events such as global financial crises, political unrest, or macroeconomic shocks were not included in the investigation.

Future research may expand the model by incorporating additional biases, longitudinal designs, and cross-cultural comparisons. The inclusion of moderating variables such as financial literacy and risk tolerance, along with emerging areas like ESG investing and digital finance, can provide deeper insights into women's investment decision-making.

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