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Cognitive Biases and Investment Decision Making: With Reference to Butwal Sub-metropolitan City

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Abstract

Purpose: This study explores how different types of cognitive biases influence investors' decisions making in Butwal City.

Methods: The study used a causal-comparative research design to examine the relationship between dependent and independent variables. Data were collected from 384 respondents using structured with a detailed seven point Likert scale and a non-probability sampling method. Quantitative analysis included both descriptive and inferential statistics including mean, standard deviation, correlation, Independent sample t test, Annova and regression analysis using the PLS-SEM method.

Results: The results shows that loss-aversion bias and herding bias play a major role in investment decisions It also showed that gender influences the link between cognitive bias and investment choices. However, overconfidence and representative bias were not found to have a significant impact on investment decisions making.

Conclusion: Investors should acknowledge how loss aversion and herding bias influence their ability to make effective investment decision making.

Keywords: Overconfidence bias, confirmation bias, herding, representativeness, anchoring

I.   Introduction

In Present context, Investment decisions play a vital role in shaping the economic landscape of the country. Investment has gained greater significance in financial planning, serving as a way to protect and expand one's financial assets (Chishti & Barberis, 2016)**.** Investments are valuable not only for safeguarding but also for strengthening one's financial security, offering a form of social safety net for the future (Mayer, 2021).

Over the past decade, investing in businesses in Nepal has become riskier due to the unpredictable nature of the economy, inflation rates, political instability, particularly stemming from the Maoist insurgency. This has led to significant fluctuations in the Nepalese stock market, reflecting the broader uncertainties in the country's economic landscape. Biases such as overconfidence, herding bias, loss aversion, and Anchoring Bias have shown their

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capacity to result in unfavorable investment decisions, increased market volatility, and in some cases, trigger financial crises (Ikram et al., 2023). Addressing cognitive biases among investors faces a significant hurdle due to a notable deficiency in financial knowledge, leaving many vulnerable to biases caused from insufficient expertise (Lusardi & Mitchelli, 2007). Rather than gathering information's human beings make decisions on the basis of their own experience and perceptions, which encourage them in doing good investment decisions (Shah et al., 2018).

The unpredictable and unstable nature of human behavior in daily life makes it challenging to understand reason; which is why studying how the human brain makes financial decisions is highly valuable. Behavioral finance has developed as an important field, offering insights into why investors often make irrational choices and how various aspects of behavioral finance impact an individual's ability to make sound financial decisions. which together help explain irrational behavior, faulty reasoning, and their influence on financial decisions (Parveen et al., 2020). Baker and Puttonen (2017) defined cognitive bias are a mistake in thinking that occurs when people understand or interpret information in a way that is not completely logical or accurate.

Recent study in traditional finance shown that investors ideally aim to base their investment decisions on rational and logical reasoning (Kubilay et al., 2016). A study on cognitive bias found a link between irrational financial decision-making and bias such as availability, overconfidence, and herding biases, but anchoring and regret aversion biases found to have no impact on irrational investment choices (Dhungana et al., 2022)

Overconfidence influences investors trading decisions, making them overreact to irrelevant information and ignore valuable insights (Hirshleifer & Daniel, 2015). Studies have shown that overconfidence in individual investment choices (Talwar et al., 2021; Kumar & Dudani, 2021; Kishor, 2020) and stock market reactions (Praveen et al., 2020).

Loss aversion comes from the prospect theory, explaining how people react to losing something. Investors with this bias tend to worry more about potential losses than making profits (Kahneman & Tversky, 1979). This means they avoid risks when they are making gains but take more risks when facing losses since they feel losses twice as strongly as profits (Tversky & Kahneman, 1991; Benartzi & Thaler, 1995).

Herding is the psychological factor that influence investor's decisions (Abul, 2019). It refers to people's natural tendency to observe, follow, and copy others' actions, often leading to market instability (Rompotis, 2018). Herding behaviour impact negatively in a bullish market trend, but it positively in a bearish market trend (Shah et al. 2019). The anchoring effect happens when people rely too much on an initial value or piece of information, leading to biased decision-making (Tversky & Kahneman, 1974).

Kahneman and Tversky (1972) defined representativeness bias as when people judge how likely something is based on how much it looks like a typical example or stereotype, instead of its real chances of happening. Park et al. (2010) suggested that confirmation bias strongly influences overconfidence, affecting how investors perceive and interpret information. According to the theory of confirmation bias, people often select information that aligns with their existing beliefs. To make fair decisions, investors should consider both supporting and opposing information, assess its relevance and reliability objectively, and thoughtfully incorporate all available data.

After analyzing various studies, certain research gaps have been identified. The existing literature heavily relies on Western behavioral finance theories, possibly ignoring the cultural biases present in Nepal (Kumar et al., 2015). The diverse socio-cultural and economic context calls for a more tailored exploration of cognitive biases, considering cultural dimensions that have significant impact on investment decision-making. Likewise, Past researcher (Dhakal, 2023 & Dhungana, 2022) conducted a study on this matter with a small sample size and utilized SPSS software. Therefore, the current study employs a larger sample size and

utilizes smart-PLS software to explore further into the topic.

Understanding the fluctuation of cognitive biases over time in Nepal's dynamic financial markets is crucial for effective interventions and policy recommendations (Filipini et al., 2021). Additionally, the unexplored impact of technological advancements, such as social media on cognitive biases among Nepalese individual investors requires empirical investigation. Therefore, there is a compelling need for a comprehensive study that not only investigates how cognitive biases affect decision making among Nepali investors but also seeks to clarify the complex relationships between these biases among different demographic variables of investors in Nepal. Such research would contribute to a deeper understanding of the dynamics of cognitive biases in investment decisions, particularly within the unique context of Nepalese individual investors. Future studies could also explore the potential differences in cognitive biases among different demographic variables of investors in Nepal.

There remains a significant need for further research on the unexplored effects of technological advancements, such as social media, on cognitive biases. Addressing this gap can help provide valid answers to various unanswered questions. Therefore, considering these issues and the study's scope, this research aims to explore the topic in depth as (i) to assess the differences among gender and age group of respondents with regards to representative bias, confirmation bias, overconfidence bias, herding bias, anchoring bias and loss aversion bias. (ii) to determine the relationship between representative bias, confirmation bias, overconfidence bias, herding bias, anchoring bias and loss aversion bias and investment decision and (iii) to examine the impact of representative bias, confirmation bias, overconfidence bias, herding bias, anchoring bias and loss aversion bias on investment decision making

II. Reviews

This section deals with the theoretical and empirical review of the study which are outlined below:

Theoretical Review

The literature search has identified the following relevant theory for the current study.

Behavioral reasoning theory describes how people beliefs, reasons, motives, intentions, and behavior influence their decision making (Sahu et al., 2020). Behavioral finance theory investigates how psychological and emotional influences on investor behavior, departing from traditional finance theory assumptions (Ricciardi, 2008). The concept acknowledges cognitive bias such as overconfidence and confirmation bias, which may lead to irrational decision-making, and emphasizes the role of emotions like fear and greed in shaping investment decisions. Additionally, the theory explores herding behavior, where investors copy others instead of making their own decisions (Almansouret al., 2023). Behavioural finance theory provide comprehensive framework for traditionally focused on portfolio selection and explains trust as a key factor in enhancing advisors effectiveness and meeting clients' needs (Cruciani, 2017).

Kahneman and Tversky (1979) introduced Prospect theory, also called loss-aversion hypothesis. It explains how people make decisions under uncertainty by focusing on gains and losses relative to a reference point rather than following traditional rational decision-making. The value function shows that losses matter more than profits, and loss aversion explains why people take risks to prevents losses. The certainty and reflection effects influence preferences for definite and hazardous outcomes depending on profits and losses (Prosad et al., 2015). Prospect theory gives light on behavioral biases such as the disposition effect, framing effects, and regret aversion in the area of investments, providing insights into decision-making difficulties under uncertainty and their implications for investment behavior (De Giorgi & Hens, 2006).

Another theories by Markowitz (1991) explains Modern Portfolio Theory is built on the idea that investors act rationally. It explains how rational investors create diverse portfolios with

various assets to maximize returns while managing risk. This theory introduced the concept of the "efficient frontier," which shows the ideal blend of investments based on risk tolerance.

According to the Expected Utility theory, Von Neumann and Morgenstern (1944) suggests that individuals have consistent and clearly defined preferences. They are aware of what they want and consistently choose one option over another, regardless of the situation. When making decisions, they consider all possible options and select what they believe to be the best choice.

Empirical Review

Dhakal (2023) examines the impact of cognitive biases on investment decision-making among Nepalese investors, focusing on overconfidence bias and herding bias. Data was collected through a self-administered questionnaire as the primary method, with a sample size of 234 respondents. Both descriptive and inferential statistical tools were used for analysis. The findings indicate that a significant number of respondents displayed either high or moderate levels of bias, highlighting it as a notable concern. Among the biases studied, representativeness bias had the strongest influence on investment decisions, followed by herding and anchoring biases. These results suggest that cognitive biases play a crucial role in shaping investment decisions among Nepalese investors and could negatively impact their financial outcomes. The study suggests that investors recognize these biases and take proactive steps to minimize their influence on decision-making.

Dhungana et al. (2022) investigates the influences of availability, overconfidence, and herd instinct biases. Quaicoe and Eleke-Aboagye (2021) shows that herding aspect as the most influential component with a significant impact on the choice of investments. Lama (2022) pointed in his study that Emotional biases affect investment behavior. Among the emotional bias, overconfidence bias had the highest negative impact on investment performance followed by regret aversion and self-control bias, which also has highest negative impact. Dangol and Manandhar (2020) examined the impact of availability bias, representative bias, anchoring and adjustment bias, and overconfidence bias. Similarly, Research by Siraji (2019), Bakar and Yi (2016), and Khan et al. (2021) found a strong connection between these heuristic biases and irrational investment decisions. Based on these findings, we suggest that heuristics influence the investment behavior of Nepalese investors. Despite being well-educated, most Nepalese investors rely on mental shortcuts rather than logical reasoning when choosing stocks.

Park et al. (2010) suggested that confirmation bias can greatly impact overconfidence, influencing how investors interpret and process information. According to the confirmation bias theory, individuals tend to select information that aligns with their existing beliefs. To make balanced decisions, investors should consider both supporting and opposing information, critically evaluate its relevance and reliability, and integrate all available data before making impartial judgments.

Festinger et al. (1956) define cognitive dissonance as they proposed that cognitive dissonance occurs when two simultaneously held cognitions are inconsistent. Furthermore, cognitive dissonance creates an unpleasant feeling in people, so they try to reduce or avoid it by changing their beliefs. Many researchers investigate the psychological cycles that are a component of cognitive psychology in terms of decision making under abnormal conditions. Overconfidence significantly affects the investment choices made by participants in the stock market of Nepal (Shrestha, 2019) study. Women are less overconfident in their investing decisions than males in terms of investment decisions (Kumar & Goyal, 2016). According to Siraji (2019), the heuristics, anchoring, availability bias, and representational bias positively impact stock investment success.

On the other hand, Dangol and Manandhar (2020) studied how heuristics affect investment decisions and the role of locus of control in this relationship. The results reveal that availability bias, representativeness bias, and anchoring significantly moderate the relationship between

investment decisions among Nepalese investors.

Shah et al. (2018) discovered that overconfidence, representativeness, availability, and anchoring negatively impact investment decisions in a study of individual investors actively trading on the Pakistan Stock Exchange (PSX) and their perception of market efficiency.

The theoretical framework of this study is explained below. It is a set of ideas, assumptions, and principles that guide the research. It helps to understand the research problem, identify important factors, and show how they are connected. A theoretical framework can be based on existing theories and models or created specifically for a study.

Figure 1

Research Framework

Independent Variables   Dependent Variable
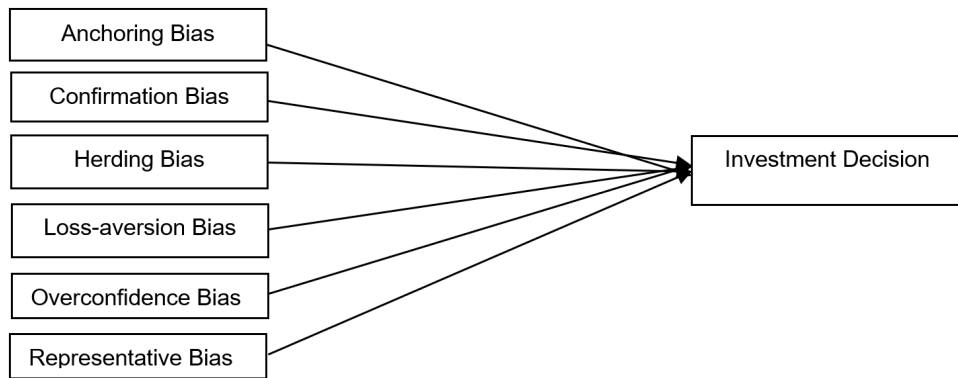
Note. Adapted from Baker and Puttonen (2017); Dhungana et al. (2022)

Based on the developed theoretical framework, the researcher has formulated the following hypotheses to analyze the structural relationship.

Anchoring Bias and Investment Decision

Anchoring and adjustment are a cognitive bias where individuals tend to rely too heavily on the first piece of information they receive when making decisions (Waweru et al., 2008). Anchoring occurs when investors base their judgements on an initial reference point. Once this anchor is established, all subsequent decisions are influenced by it, leading to errors or biases in interpreting related information (Shah & Mahmood, 2018). Waweru et al. (2008) found that the financial decisions of institutional investors on the Nairobi Stock Exchange were affected by anchoring bias. Similarly, Shah et al. (2018) observed that anchoring bias had a significantly negative impact on the investment decision of individual investors actively trading on the Pakistan Stock Exchange.

H1: Anchoring Bias has positive influence on investment decision making.

Confirmation Bias and Investment Decision

Park et al. (2010) suggested that confirmation bias would make them more overconfident and adversely affect their investment performance. The theory of confirmation bias suggests that people tend to seek out information that aligns with their existing beliefs. To make fair and balanced decisions, investors should consider both confirming and disconfirming information, critically assess its relevance and reliability, and carefully integrate all available data before

drawing conclusions.

H2: Confirmation Bias has positive influence on investment decision making

Herding Bias and Investment Decision

Herding is the psychological factor that affects investor's decision making (Abul, 2019). It is a common human tendency to observe, follow and imitate others behavior, leading to irregular patterns in stock (Rompotis, 2018). Herding behavior has a negative impact in a bullish market trend, but positive influence in a bearish market trend (Shah et al. 2019). Investment decisions are greatly influenced by herding behavior (Raheja & Dhiman, 2019). Shah et al., (2017) found that herding occurs in the Pakistan stock market, affecting investment decision. However, herding behavior does not change the investment policies or preferences of stock market investors.

H3: Herding bias has significant impact on investment decision making

Loss-aversion Bias and Investment Decisions

Loss Aversion Bias rooted in our tendency to avoid losses more than pursue gains, often influence our decision making. Investors influence by loss aversion bias tend to prioritize risk avoidance, shaping their investment decisions (Khan, 2017). They might choose for safer options, even if potential gains are limited, due to their strong aversion to incurring losses (Ainia & Lutfi, 2019). This bias emphasizes the psychological aspect of investment decisions and highlights the significance of understanding and managing such cognitive biases to achieve effective decision-making.

Overconfidence and Investment Decision

Investors tend to be highly confident in trading securities and generally make rational choices, but they are influenced by overconfidence bias (Huang et al., 2014). They often believe they have better knowledge of the stock market and can predict stock movements more accurately than others (Larrick et al., 2007). As a result, they overestimate their understanding of market information while underestimating risks (Etzioni, 2014). Optimism plays a key role in shaping expectations for favorable investment outcomes (Iqbal, 2015). Overconfidence bias is a significant factor in investment decisions in Pakistan (Aftab, 2020) and directly influences investors' choices (Quddoos et al., 2020). However, Adil et al. (2022) found that overconfidence had little impact on investment decisions.

H5: Overconfidence has a significant impact on investing decisions.

Representative Bias and Investment Decisions

Investors often make decisions based on mental shortcuts and stereotypes (Shefrin, 2007). Representativeness bias makes people trust stereotypes too much, leading them to make predictions using quick judgments that may not fit the actual situation (Shefrin, 2008). Toma (2015) found that this bias positively influences investment decisions and can enhance individual investors' returns.

H6: Representative Bias has positive influence on investment decision making.

III.   Methodology

This section includes the research design, population, sample size, sampling method, nature and source of data, instrument for data collection and method of data analysis:

Research Design

This study employs Descriptive and Causal-Comparative research designs. Causal-comparative research design often employs statistical methods such as Spearman Rank Order, Correlation Coefficient, Regression, t-test, Chi-square, and Analysis of Variance

(ANOVA) (Issac, 1978; Pant, 2012). The population of the research study includes all the individual investors actively trading in the Nepali Share market, engaging in buying/selling of the securities in case of population size is unknown, the Cochran formula for determining the sample size and the sample size is 384. Convenience sampling technique was used to select the sampling, as the study was limited to Butwal, where the number of investors is relatively small. However, the use of convenience sampling may restrict the generalizability of the findings. Therefore, future research should consider employing a simple random sampling technique to enhance future research.

Quantitative data for the study were collected through a primary source to ensure accuracy and relevance. A self-designed questionnaire was developed using conceptual knowledge gathered from previous studies. There was a total of 28 items, measured using a seven point seven-point Likert scale ranging from 1–Strongly Disagree and 7–Strongly Agree to assess both outcome and predictor variables. Initially, detailed practices and constructs related to the selected variables were identified. Five constructs were chosen under the broad category of Investment Decision. Lastly, a pilot test of questionnaire was conducted by distributing the questionnaire to a sample of 30 respondents to minimize errors. Based on the properly completed questionnaires and the sample selection criteria, the final sample size was determined to be 384, achieving a response rate of 87%. The study has used SPSS software version 20 and smart-PLS for data analysis. Various statistical methods were applied based on the suitability of the data. Descriptive statistics, including mean and standard deviation, were calculated to analyze and interpret investor responses. Additionally, a reliability test was conducted to evaluate the consistency of the research instrument. To assess data normality, the Kolmogorov-Smirnov (K-S) test was used. Based on the normality results, both parametric and non-parametric tests were applied in inferential analysis.

Furthermore, correlation analysis was performed to measure relationships between variables, while regression analysis was conducted to determine the impact of independent variables on the dependent variable.

IV.   Results and Discussion

This section presents the analysis and results of the study. The collected data was analyzed using Smart-PLS and SPSS software, and the findings are included below.

Table 1

Measurement Items Assessment

Variables	Items	VIF	Mean	SD	Mean of Construct	SD of Construct
Anchoring Bias	AB1	1.502	5.159	1.719		
	AB2	3.390	5.122	1.571	5.018	1.655
	AB3	2.269	4.711	1.799		
	AB4	2.545	5.081	1.531		
Confirmation Bias	CB1	2.876	4.661	1.946		
	CB2	2.656	4.266	1.965	4.304	1.976
	CB3	2.440	4.375	2.051		
	CB4	2.125	3.914	1.941		

Herding Bias	HB1	2.471	4.372	1.926		
	HB2	2.978	4.828	1.847	4.419	1.910
	HB3	2.845	4.276	1.892		
	HB4	3.066	4.201	1.973		
Investment Decision	ID1	2.507	5.615	1.453		
	ID2	2.953	5.034	1.767	5.188	1.719
	ID3	2.603	5.018	1.806		
	ID4	2.705	5.083	1.848		
Loss-aversion Bias	LAB1	3.515	5.367	1.523		
	LAB2	4.558	5.469	1.507	5.339	1.582
	LAB3	3.464	5.409	1.634		
	LAB4	3.205	5.112	1.662		
Overconfidence Bias	OB1	3.253	4.638	1.816		
	OB2	4.012	4.604	1.793	4.678	1.854
	OB3	2.593	5.13	1.75		
	OB4	1.810	4.341	2.055		
Representative Bias	RB1	2.591	3.724	1.863		
	RB2	3.682	3.365	2.163	4.591	2.035
	RB3	3.460	3.474	2.133		
	RB4	2.121	3.799	1.981		

Table 1 presents the measures and validity related to the outer model, including standardized outer loading, Variance Inflation Factor (VIF), mean, and Standard Deviation (SD) of the outer model. The assessment uses Twenty-eight scale items to evaluated seven latent variables. All outer loading values exceed the threshold of 0.70, confirming each item's strong contribution to measuring its respective variable (Sarstedt et al., 2017). Similarly, all VIF values are below 5, indicating no multicollinearity among the scale items (Hair et al., 2019). Consequently, there is no multicollinearity among the items.

The mean and standard deviation (SD) results of all the measurement items are in a good range on 7-point Likert scale data. Hence, the measurement items qualify for reliability and validity for further assessment. Therefore, the measurement items meet the criteria for reliability and validity for further evaluation. Table displays the mean value of loss aversion bias, which is 5.339, indicating that the investors responses strongly lean towards an agreement, with many approaching "Strongly Agree". Similarly, above table displays the mean value of anchoring bias which is 5.018, indicating that the investors responses are above the agreement. This suggests that the users have good knowledge about investment education.

Table 2

Construct Reliability and Validity Assessment

Variables	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Anchoring Bias	0.861	0.861	0.907	0.709
Confirmation Bias	0.895	0.902	0.927	0.760
Herding Bias	0.911	0.944	0.936	0.786
Investment Decision	0.904	0.916	0.933	0.776
Loss Aversion Bias	0.935	0.937	0.954	0.837
Overconfidence Bias	0.898	0.918	0.929	0.766
Representative Bias	0.898	0.899	0.929	0.765

Table 2 shows the reliability and validity of the constructs used in this study. The Cronbach's Alpha values for all constructs are above the standard threshold of 0.705 (Bland & Altman, 1997), confirming strong internal consistency and reliability of the measurement scale. Additionally, the Composite Reliability (CR) rho_a and CR rho_c values are above 0.70, indicating that the constructs are both reliable and valid (Saari et al., 2021; Hair et al., 2022). The Average Variance Extracted (AVE) values exceed the 0.50 threshold, confirming that all constructs meet the criteria for convergent validity (Hair et al., 2022). Therefore, the results in the table meet all necessary quality standards.

Table 3

Normality Test

	Overconfidence Bias	Anchoring Bias	Confirmation Bias	Herding Bias	Representative Bias	Loss-aversion Bias	Investment Decision
Kolmogorov-Smirnov Z	0.1	0.113	0.096	1.155	0.121	0.174	0.186
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000

As shown in Table 3, since the Z value for overconfidence bias, anchoring bias, confirmation bias, herding bias, representative bias, loss aversion bias and investment decision fall within the range between **-1.96 to +1.96**. This indicates that these variables follow a normal distribution. Since the data is normally distributed, parametric tests are used, as they are appropriate for such data.

Table 4

Parametric Test: Independent Sample T Test

Variables	Statistics	Anchoring Bias	Confirmation Bias	Herding Bias	Loss-aversion Bias	Overconfidence Bias	Representative Bias
Gender	T-value	1.500	0.670	0.672	0.072	0.136	0.246
	P-value	0.315	0.504	0.422	0.045	0.315	0.692
Marital Status	T-value	0.059	0.190	0.369	0.168	0.283	0.384
	P-value	0.951	0.849	0.712	0.360	0.972	0.351

From the table 4, it is observed that the P value of loss aversion bias is 0.045 which is less than 5 percent. Therefore, it can be concluded that there is a significant difference between male and female investors regarding investment decision . Similarly, the P value of representative bias, herding bias, confirmation bias, anchoring and. Overconfidence bias is 0.692,0.422, 0.504,0.135 and 0.315, which suggests that their value are more than 5 percent. Therefore, there is no significant difference between male and female investors regarding investment decision.

Table 5

Parametric Test: One way Annova Test

Variables	Statistics	Anchoring Bias	Confirmation Bias	Herding Bias	Loss-aversion Bias	Overconfidence Bias	Representative Bias
Age	F-value	0.905	0.992	0.936	0.483	1.23	1.136
	P-value	0.461	0.412	0.043	0.748	0.298	0.339
Education	F-value	0.31	1.901	1.531	1.902	2.559	2.547
	P-value	0.734	0.151	0.218	0.151	0.079	0.08
Occupation	F-value	0.381	0.164	0.505	0.685	1.909	0.115
	P-value	0.767	0.921	0.679	0.561	0.128	0.951
Experience	F-value	1.317	0.957	1.528	0.834	1.3	1.196
	P-value	0.268	0.413	0.207	0.476	0.274	0.311

From the table 5, it is shown that the P-value for overconfidence bias is 0.298, which is greater than 5%. This means that the alternative hypothesis (H_2) is rejected at the 5% significance level. In other words, investors from different age groups have similar views on

overconfidence bias. The mean values for different age groups also show that their opinions on overconfidence bias are alike.

Table 6

Correlation

Variables	Overconfidence Bias	Anchoring Bias	Confirmation Bias	Herding Bias	Representative Bias	Loss-aversion Bias	Investment Decision
Overconfidence Bias	1	.648**	.566**	.569**	.539**	.736**	.532**
Anchoring Bias		1	.379**	.358**	.382**	.707**	.591**
Confirmation Bias			1	.719**	.874**	.471**	.347**
Herding Bias				1	.689**	.393**	.195**
Representative Bias					1	.468**	.324**
Loss-aversion Bias						1	.715**
Investment Decision							1

Table 6 shows the correlation (r) values between investment decisions and various cognitive biases: Anchoring bias (0.532), Confirmation bias (0.591), Herding bias (0.347), Loss-aversion bias (0.195), Overconfidence bias (0.324), and Representativeness bias (0.715). These values indicate a strong positive relationship between cognitive biases and investment decisions.

Table 7

Model Summary

Variables	F-Square	Effect
Anchoring Bias -> Investment Decision	0.034	Small
Confirmation Bias -> Investment Decision	0.126	Medium
Herding Bias -> Investment Decision	0.046	Small
Loss-aversion Bias -> Investment Decision	0.297	Medium
Overconfidence Bias -> Investment Decision	0.031	Small
Representative Bias -> Investment Decision	0.446	Large

From the Table 7 it is found that the f-square value of anchoring bias is 0.034 on investment decision, indicating a small effect size. The f-square value of confirmation bias is 0.126 on investment decision, indicating a small effect size. The f-square value of herding bias is 0.046

on investment decision, indicating a small effect size. The f-square value of Overconfidence bias is 0.031 on investment decision, indicating a small effect size. Similarly, The f-square value of loss aversion bias is 0.297 on investment decision, indicating a medium effect size. Further, the f-square value of Representative bias is 0.446 on the investment decision, indicating a large effect size (Cohen, 1988).
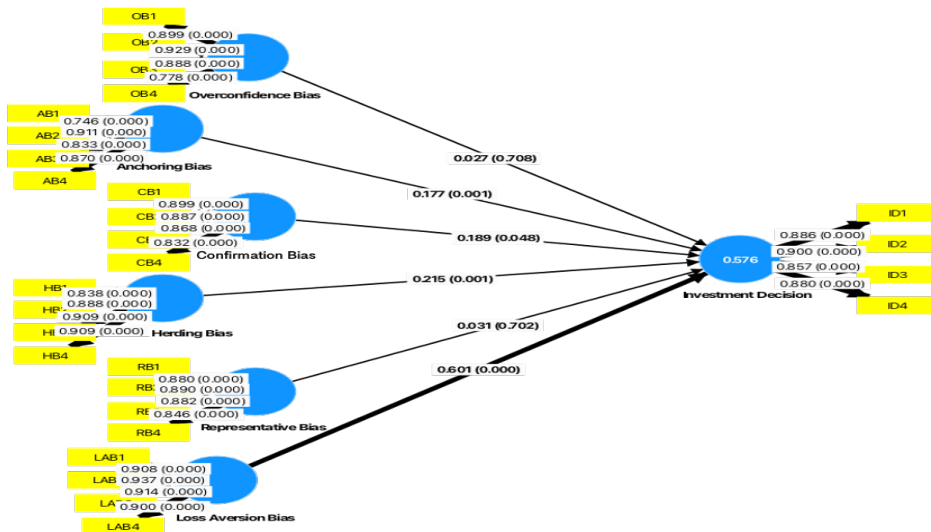
Figure 1

Structural Model Assessment

Table 8

Hypothesis Testing: Direct Effect

Variables	β	P values	Decision
Anchoring Bias -> Investment Decision	0.177	0.001(p<0.05)	Accepted
Confirmation Bias -> Investment Decision	0.189	0.048(p<0.05)	Accepted
Herding Bias -> Investment Decision	0.215	0.001(p<0.05)	Accepted
Loss-aversion Bias -> Investment Decision	0.601	0.000(p<0.05)	Accepted
Overconfidence Bias -> Investment Decision	0.027	0.708(p>0.05)	Rejected
Representative Bias -> Investment Decision	0.031	0.702(p>0.05)	Rejected

Table 8 presents the P-values for different biases in relation to investment decisions. The results show that anchoring bias (0.001), confirmation bias (0.048), herding bias (0.001), and loss-aversion bias (0.000) are statistically significant at the 0.05 level, meaning they have a strong relationship with investment decision making. However, overconfidence bias (0.708) and representativeness bias (0.702) are not significant at the 0.01 level, indicating no strong impact on investment decision making. Based on these findings, hypotheses H1, H2, H3, and H4 are accepted, while H5 and H6 are rejected.

Discussion

The study examined the effect of six cognitive biases on investors' decisions: herding,

anchoring, overconfidence, representativeness, loss aversion, and confirmation bias. Among these, loss aversion bias had the strongest influence on irrational investment decisions, with β3=0.601 and p<0.05, showing a significant positive relationship with investment decisions. This finding aligns with previous research by Lather et al., (2020); Lim (2012); and Khan (2017). Likewise, Herding bias was the second most influencing factor, with β3=0.215 and p<0.05. Research by Dhakal et al., (2023) and Dhungana et. al., (2022) also found that herding and anchoring biases significantly impact investment decision making among Nepalese investors. Likewise, Confirmation Bias had the third highest impact on investment decision making with β3=0.189 and p<0.05. Although studies on confirmation bias in Nepal are limited, research by Armansyah (2022) found its significant impact on Indonesian investors' decisions. Similarly, Anchoring bias had the fourth highest impact on investment decisions with β3=0.177 and p<0.05. The study by Dangol et al., (2020) also confirmed that anchoring significantly impacts irrational investment decisions. However, overconfidence bias and representativeness bias were found to have no significant effect, as their p-values were greater than 0.05. The study conducted by Aigbovo and Illaboya (2019) implies that overconfidence and representative bias had an insignificant impact on investment decisions suggesting the more the investors rely on their past investment history the higher their average returns.

V.   Conclusion and Implication

This study was conducted to examine the relationship between cognitive biases and investment decisions, particularly among Nepalese investors. The findings of this study indicate that four out of six cognitive biases significantly influence investment decisions, with loss aversion and herding bias playing a crucial role. This suggests that if stock exchanges and policymakers focus more on this factor then there is high chances that investment decision can be enhanced for investors. Additionally, the study identified that there is differences in investment decision making based on gender and age. As a result, it can be concluded that stock broker should focus on gender differences between male and female which may impact how individuals perceive and respond to cognitive biases, emphasizing the importance of considering diverse perspectives in behavioral finance research. In addition to adding value to research, the study has real-world applications for educators, legislators, and investors who want to improve the resilience and efficiency of the Nepalese stock market. Future studies could deeper into these gender dynamics to uncover additional insights into investor behavior. These findings can be valuable for financial service and investment firms, educational institution which helps them to provide advice and design investment products that align with investors behavioral tendencies.

Researchers and policymakers can use the study findings to guide future research and develop evidence-based policies that specifically address Cognitive biases in the Nepalese stock market. Stock exchanges could use these findings to enhance investor education program, helping investors recognize and mitigate cognitive biases. Brokerage firms can tailor their services to address the specific biases identified in the study. They might offer personalized investment advice that help individual overcome these biases. Regulatory bodies can improve investor protection rules. They could make regulations promoting transparency, preventing investors from being influenced by cognitive biases. Investors need to recognize cognitive biases and apply de-biasing techniques to reduce their impact when making financial decisions.

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