BEHAVIOURAL BIASES AND THEIR EFFECT ON RISK PERCEPTION

A Dissertation submitted to the Office of the Dean, Faculty of Management in Partial Fulfilment of the requirements for the Master's Degree

By

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Certificate of Authorship

I hereby corroborate that I have researched and submitted the final draft of the dissertation entitled **"Behavioural Biases and Their Effect on Risk Perception".** The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees nor it has been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work have been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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November, 2024

Report of Research Committee

Ms. Usha Khanal has defended the research proposal entitled **"Behavioural Biases and Their Effect on Risk Perception"** successfully. The research committee has registered the dissertation for further progress. It is recommended to carry out the work as per suggestions and guidance of supervisor Asso. Prof. Dr. Kapil Khanal and submit the thesis for evaluation and viva voce examination.

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Approval Sheet

We have examined the dissertation entitled **"Behavioural Biases and Their Effect on Risk Perception"** presented by Usha Khanal for the degree of Master of Business Studies (MBS Semester) and conducted the Viva voce examination of the candidate. We hereby certify that the dissertation is acceptable for the award of the degree.

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Abbreviations

AB	Anchoring Bias
ANOVA	Analysis of Variance
APT	Arbitrage Pricing Model
CAPM	Capital Asset Pricing Model
EMH	Efficient Market Hypothesis
HB	Herding Bias
IS	Investment Sentiment
LAB	Loss Aversion Bias
OB	Overconfidence Bias
PLS-SEM	Partial Least Square Structural Equation Modelling
PSX	Pakistan Stock Exchange
RP	Risk Perception
SECP	Securities and Exchange Commission of Pakistan
SEM	Structural Equation Modelling
TPB	Theory of Planned Behaviour
VAR	Vector Autoregression

Abstracts

The main objective of this study is to discover the impact of behavioural biases on the risk perception of individual investors. The descriptive and causal research design was employed in this study. This study used primary data from one hundred fifty-five individual investors collected randomly. The collected data has been analyzed by using some statistical tools such as mean, standard deviation, correlation analysis, ANOVA and regression analysis. The data is collected through a structured questionnaire method using the Likert Scale. The age, gender, employment type, and expertise are the indicator of demographic factors. The behavioural biases are investment sentiment, overconfidence bias, anchoring bias, herding bias, loss aversion bias, and risk perception are the dependent variables in this study. The collected information and the numerical data have been analyzed by using the SPSS 27.0 version to show the data and results clearly.

The regression analysis shows that the value of the R square is 0.430, which indicates that 43.0% of the systematic variation in risk perception can be explained by independent variables such as investment sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion bias. The remaining percentage is due to the effect of other factors. The regression analysis shows that when all independent variables are zero, the baseline Risk Perception is 7.695. Investment Sentiment (coefficient 0.316, p=0.000) has positive, significant effects on Risk Perception, with Investment Sentiment being a strong predictor. Herding Bias (coefficient 0.388, p=0.000) also significantly increases Risk Perception, underscoring the impact of social influences on risk awareness. Conversely, Anchoring Bias (coefficient -0.157, p=0.014) has a significant negative effect, suggesting that those who rely on initial information perceive lower risk. Overconfidence (p=0.290) and Loss Aversion (p=0.333) are not statistically significant, showing they do not meaningfully affect Risk Perception in this model. Overall, social influences (herding) and sentiment are key factors in shaping investors' risk perception, while anchoring bias reduces it. In conclusion, these findings reinforce the notion that investor psychology, shaped by both individual and social factors, plays a critical role in shaping how risks are perceived and managed in the financial context.

Keywords: *Risk Perception, Overconfidence, Herding, Anchoring Bias, Loss Aversion Bias, Investment Sentiment*

CHAPTER I

INTRODUCTION

1.1 Background of the Study

Research on behavioral biases and how they affect how risk is perceived has grown in importance within behavioral finance, especially as financial markets become more complicated. Investors' perceptions of risk and decision-making processes are greatly impacted by behavioral biases, which are systematic mistakes in decision-making that result from psychological variables. Divergent risk perceptions are influenced by demographic variables such age, gender, kind of job, and experience. For example, younger or more seasoned investors may be more willing to take on risk, whereas older or less seasoned investors tend to make more cautious choices. These demographic characteristics combine with prejudices like loss aversion and overconfidence to make it more difficult for individual investors to comprehend and react to risks (Pompian, 2016).

All investors would rather put their money into more lucrative and liquid stocks. They always make intelligent stock selections, and as an investor, it must be obvious where one should put money. They do not, however, make fair evaluations that would eventually lead to changes in investing selections since they are psychologically prejudiced in their own choices. As a result, the market has experienced the disposition impact (Frydman et al., 2014). It is the propensity of investors who sell winners' stocks too early and retain losers for a long time until these equities convert into the winning ones (Frydman et al., 2014; Henderson, 2012). (Frydman et al., 2014; Henderson, 2012). It heavily affects the decision-making (Arshad & Ashraf, 2018; Henderson, 2012). Every investment statement is derived from an investor's profile, according to Pompian (2011), who also said that this is the most effective way to manage behavioral biases. The investment statement pertaining to an investor's profile aids in detecting behavioral bias in the investment selection process. Investor decision-making is strongly correlated with behavioral biases, including overconfidence bias, mental accounting, anchoring, and herd prejudice (Kartašova, 2013; Parveen et al., 2020). In particular, overconfident management and investors raise the firm's worth without providing clear guidance (Shah et al., 2018).

Numerous elements, including as contextual information, emotional attitudes, cognitive biases, and demographic traits, influence the complex idea of investor risk perception. Before making financial decisions, people carefully consider the facts at their disposal,

according to research. However, they frequently deviate from strictly rational action due to their psychological proclivities, especially biases. Researchers can gain a better understanding of how investors view and respond to risk in dynamic market settings by dissecting these variables (Schaafsma et al., 2015). In order to better understand investor psychology and assist financial professionals in customizing investment products and strategies to individual risk profiles, this study aims to rebuild the link between behavioral biases and risk perception in the context of investment decisions.

The influence of behavioral biases on decision-making has been the subject of several research due to the rising interest in behavioral finance. Prospect Theory, which was first proposed by Kahneman and Tversky in 1979 and questioned conventional economic models that presumed rational behavior, is one of the fundamental ideas in this field. Prospect Theory showed that when confronted with unknown outcomes, people often show risk aversion, which is made worse by biases like loss aversion and overreaction (Bondt & Thaler, 1985). A number of economic theories have come under fire for assuming that investors are rational, particularly when faced with uncertainty. As Arrow (1986) noted, outside variables including information, market dynamics, and cultural settings frequently have an impact on rational conduct.

Mental images of dangers and the possibility of actual losses influence how people perceive risk, which is both an individual and a social construct (Renn, 1998). The human response to erratic market conditions is the fundamental component of risk in economic activity. When making decisions, perceived risk may be more important than real risk, as Ricciardi (2008) pointed out. Overconfidence, herding, and anchoring are examples of behavioral biases that distort risk perceptions and frequently lead to judgments that depart from traditional investing theories. These biases have a substantial influence on how investors estimate the possibility for loss or gain, thereby altering their investing behaviour (Sachse et al., 2012).

The influence of behavioral biases is especially important in the stock market. By acting as a bridge between investors with surplus capital and entrepreneurs in need of funding, the stock market plays a crucial role in economic activity. Even though capital markets have grown significantly, as seen by the increase of Indonesia's composite stock price index (IHSG), many investors still base their judgments on heuristics and scant knowledge. This dependence on short cuts frequently produces less-than-ideal results, especially during uncertain or volatile market periods (Lovric et al., 2010). The growth of Indonesia's

investing industry has shown how crucial it is to comprehend how behavioral biases impact risk perception and judgment.

It has been discovered that behavioral biases including anchoring, herding, overconfidence, and investor emotion have a big impact on investing choices. For instance, Nareshwar et al. (2021) discovered comparable patterns in various market environments, whereas Metawa et al. (2019) showed that biases such as investor sentiment and overreaction play crucial roles in decision-making processes. According to Sitinjak (2013), Indonesian investors tend to sell stocks fast when they are lucrative but refrain from doing so during losses. Yalcin et al. (2016) also mentioned the salience bias, which states that investors are more inclined to invest in businesses they are acquainted with. These biases draw attention to the intricate interplay between emotional and cognitive elements that shapes investors' perceptions of risk.

Both traditional and behavioral finance literature have placed a strong emphasis on how investors make decisions. Behavioral finance contends that psychological biases have a substantial impact on investing behavior, challenging the conventional finance assumption that investors are logical and base their judgments only on the facts at hand. Prospect Theory, which was first presented by Kahneman in 2007, states that investors frequently use heuristics, or mental shortcuts, which cause them to base their judgments on incomplete knowledge rather than a careful examination of the available facts. These prejudices, which originate from each person's own personality, might cause illogical decisions that have a detrimental impact on trading frequency and overall investing results (Acciarini et al., 2020). According to conventional financial theories, such as the Efficient Market Hypothesis (EMH), markets are efficient, which means that stock prices continue to represent their fair value even in the face of biases caused by investors (Cassidy, 2010). But these models frequently ignore how emotions and psychological aspects play a part in investment choices (Delcey, 2019).

For investors and market regulators alike, a thorough grasp of how behavioral biases impact risk perception is essential. By creating regulations that address the impact of biases on investor behavior, the Nepal Stock Exchange and other financial institutions may use these findings to advance market efficiency and stability. Acknowledging one's personal biases might help individual investors better understand themselves and make more logical decisions. As a result, investors may be able to make better-informed, calculated stock market decisions and lessen the influence of behavioral biases on risk perception.

1.2 Problem Statement

Behavioral biases have a big impact on investors' decisions, especially in collectivist nations like Nepal. Investors are more vulnerable to peer pressure, social influence, and emotional responses to market movements because of these biases, which frequently overwhelm logical decision-making (Akbar et al., 2016). Important biases that skew risk perception and result in irrational financial decisions include herding, overconfidence, and loss aversion (Kim & Nofsinger, 2008). But little is known about the precise connection between behavioral biases and risk perception in a collectivist cultural setting like Nepal.

While behavioral biases and investment choices have been the main focus of research on Pakistan's stock market, risk perception has frequently been overlooked as a crucial mediating component (Riaz & Hunjra, 2015). One important filter via which investors' behavioral biases affect their decision-making is risk perception. The lack of clarity around the ways in which behavioral biases and risk perception combine to influence investment choices emphasizes the necessity for more research, particularly in developing economies where these dynamics may differ from those seen in industrialized nations.

Behavioral finance biases also significantly influence investors' gains and losses in developing markets like Nepal (Parveen et al., 2020). While representativeness bias may encourage investors to purchase costly stocks based on scant information, biases such as overconfidence can result in excessive trading and large financial losses as a result of bad decision-making (Jaiyeoba et al., 2018). Additionally, inefficient market behavior may result from emotional responses to unfavorable news or from underestimating uncommon occurrences (Grable et al., 2020). Since more knowledgeable investors often make better selections, financial literacy is also essential for controlling risk perception (Ababio, 2020; Mouna & Anis, 2015).

The link between behavioral biases and investing decisions can be better understood by taking risk perception into account as a mediator. Risk perception acts as a mediator that influences how people perceive and respond to hazards, and behavioral finance emphasizes how emotions and cognitive biases impact decision-making (Ahmed et al., 2022). Researchers might learn more about the psychological processes behind financial decision-making by comprehending how risk perception affects investing behavior, especially with regard to how an investor's willingness to assume risk is influenced by subjective assessments of risk.

Since much of the existing material is centered on Western contexts, it is not as applicable to developing markets with significant cultural and economic disparities like Nepal and Pakistan (Akbar et al., 2016). More localized study is necessary to comprehend how biases like herding and overconfidence affect investment decisions in these collectivist societies because of their distinct behavioral dynamics. By investigating the role of behavioral biases and risk perception in Nepal's stock market, this study seeks to close this knowledge gap and offer insightful information that will help investors and policymakers create strategies that are appropriate for the unique behavioral patterns found in these markets.

The research question of the study is given below;

- Is there any relationship between behavioural biases such as investor sentiment, overconfidence bias, anchoring bias, herding bias, loss aversion, and risk perception?
- How do behavioural factors such as investor sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion affect individual investor's risk perception?
- Which factors mostly affect the investor's risk perception?

1.3 Objective of the Study

The objective of this study is to develop a comprehensive understanding of the behavioural factors that affect the risk perception of individual investors in the Nepalese Stock Exchange. To simply the necessity of this research three objectives has been formulated;

- To analyze the relationship between behavioural biases such as investor sentiment, overconfidence bias, anchoring bias, herding bias, loss aversion, and risk perception.
- To investigate the impact of behavioural factors such as investor sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion on the individual's risk perception
- To assess the extent to which behavioural biases mostly affect the investor's risk perception

1.4 Rationale of the Study

The study of behavioural biases in investment decision-making is increasingly important in understanding how investment sentiment, and psychological tendencies influence risk

perception. Investment sentiment plays a crucial role in shaping investor behaviour, often driving decisions that deviate from rationality. Market conditions, news, and social influences can significantly impact sentiment, leading to phenomena such as herding behaviour, where individuals mimic the actions of others rather than relying on their analysis. This study seeks to explore how prevailing investment sentiment interacts with behavioural biases to influence risk perception, thereby affecting overall investment decisions. Understanding these dynamics is essential for identifying the mechanisms that lead to irrational behaviour and market anomalies, which can have far-reaching implications for both individual investors and the broader financial market.

Behavioural biases such as overconfidence, anchoring, and loss aversion are critical factors that can distort an investor's perception of risk. Overconfidence may lead investors to overestimate their ability to predict market movements, resulting in higher risk-taking behaviour without adequate justification. Anchoring bias can cause individuals to rely too heavily on irrelevant information, affecting their risk assessments. Meanwhile, loss aversion—the tendency to prefer avoiding losses over acquiring equivalent gains—can lead to overly cautious investment strategies that hinder potential returns. By investigating these biases and their interactions with risk perception, this study aims to enhance the understanding of how cognitive distortions impact investment behaviour.

In a rapidly evolving financial landscape, comprehending the influence of behavioural biases on risk perception is vital for improving investment decision-making. This study addresses the existing literature gaps regarding the interplay of these biases and aims to provide practical insights for investors, financial educators, and policymakers. By elucidating the complex relationships among behavioural biases and risk perception the findings can help develop targeted interventions and educational programs that enhance financial literacy and encourage more rational investment behaviours among individuals.

1.5 Limitations of the Study

Every study has some limitations. This research was also undertaken with the following limitations:

- This study only focuses on behavioural biases and their effect on risk perception.
- Respondents' emotions and suggestions are not included in this research.
- The sample will be taken from randomly selected respondents, who might represent the whole population.

- The size of the sample was relatively small. A bigger sample would probably enhance the reliability of the research.
- As respondents are chosen from the investors, generalization for the whole population is not perfectly fulfilled although random sampling is applied.

CHAPTER II
LITERATURE OF REVIEW

A review of the literature highlights the main points of research papers or studies and demonstrates how they relate to other studies on the same topic. This section will examine many papers and research on the subject of behavioural finance, including the psychological and social factors that affect the individual's decision-making.

2.1 Theoretical Review

Stock returns were thought to be predicted by conventional financial models like the Markowitz Model, Arbitrage Pricing Model, or Capital Asset Pricing Model (CAPM). However, they haven't yet provided an explanation for future cash flows that depart from the fundamentals. However, behavioral finance theories suggest that asset prices are driven by attitudes. Furthermore, behavioral finance theories contend that investor irrationality drives asset values and might account for market volatility, challenging fundamentals as forecasters of future cash flows. Because the standard models can be difficult to use and comprehend, investors who favor behavioral finance turn to simpler decision-making factors like feeling and instinct. The selection of simpler ways to solve complex investment decisions could result in heightened risk.

2.1.1 Consumer Behaviour and Perceived Risk

The process and actions people take to find, choose, buy, use, assess, and discard goods and services to fulfill their needs and wants are referred to as consumer behavior. The model of consumer behavior, which later evolved into the "theory of buyer behavior," was first created by Howard and Sheth (1969). Because it provides a comprehensive synthesis of the various social, psychological, and commercial influences on consumer choices, the theory is frequently employed. Bauer (1960) first claimed that subjective risk was the only factor influenced by perceived danger. "In the sense that any action of a consumer will produce consequences which he cannot anticipate with anything roughly certain, and some of which at least are likely to be unpleasant," is the definition of perceived risk (Bauer, 1960). "The citizen's subjective expectation of suffering a loss in pursuit of a desired outcome" is another definition of perceived risk.

2.1.2 The Theory of Planned Behaviour (TPB) and Intentions

The TPB derived from the reasoned action theory is "open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in

intention or Behaviour after the theory's current variables have been taken into account" Ajzen (1991). This theory proposes that an individual's attitude toward a Behaviour, subjective norms, and perceived control can influence intentions. A subjective standard pertains to one's perspective, perceived control is concerned with the perceived difficulty of executing the behavior, and an attitude toward a behavior is defined as one's evaluation of the behavior based on his or her views (Ajzen, 1991). This theory offers a model for predicting behavior through intentions, which are characterized as a person's assessment of the probability of acting in a certain way (Ajzen & Fishbein, 1980).

2.1.3 Prospect Theory

Kahneman and Tversky propose the prospect theory (1979). Generally speaking, it clarifies how investors decide when faced with particular dangers. They contend that people evaluate their viewpoints on gain and loss asymmetrically. Therefore, prospect theory seeks to explain people's real behavior, in contrast to anticipated utility theory, which models the choices that fully rational agents would make. They discovered that while wins make us feel happy, defeats harm us almost twice as much. In other words, people experience twice as much pain from loss as they do from pleasure at an equivalent gain. Loss aversion refers to the belief that the psychological impact of losing is roughly double that of winning. Prospect theory also suggests that people are more likely to take bigger risks in order to prevent losses than in order to increase their earnings. In other words, when investors see gains, they will be more likely to be risk-averse, and when they see losses, they will be more likely to be risk-takers (Kartini & Nahda, 2021). This discovery runs counter to Markowitz's (1952) anticipated utility theory, which holds that a rational investor would always behave consistently, regardless of whether they are risk-averse or risk-takers.

Investors prefer confidence in outcomes over likely returns, according to prospect theory by Kahneman and Tversky (1979); this tendency is known as the certainty effect. Due to irrationality, the certainty effect makes an investor more risk averse when there is a chance of profit and more risk-seeking when there is a chance of loss. Accordingly, the irrational investor will sell a rising stock to lock in the gain and hang onto a sinking asset to prevent a loss from materializing (Barberis et al., 2016). Additionally, according to the idea, the investor gives decision weights to gains and losses rather than the asset's actual worth since he or she experiences more pain when a loss occurs than delight when a profit is equivalent.

2.1.4 Heuristic Theory

Tversky and Kahneman (1974) used the term "heuristic" to explain how judgments made in complicated and uncertain situations are primarily dependent on assumptions about the probability of unknown events. Uncertainty in events refers to uncertainty about whether an event will occur. These ideas then contribute to a heuristic mindset, where individuals frequently employ general guidelines to streamline their decision-making. De Bondt et al. (2008) reinforced the idea that people (investors) have preconceived notions that influence their reasoning and decision-making. According to Fromlet (2001), heuristics are "the application of experience and practical efforts," which refers to an attempt to swiftly evaluate data by depending on intuition and experiences. It describes how people or organizations come to conclusions when faced with ambiguity. Due of their tendency to interpret information based on heuristics, investors often make poor decisions. A heuristic method can, on the one hand, speed up the decision-making process. This strategy might lead to systemic biases or mistakes. The three categories of heuristic bias identified by Tversky and Kahneman (1974)—representativeness, availability, and anchoring biases—will be examined in this study (Kartini & Nahda, 2021).

2.1.5. Framing Theory

The subsequent discussion of cognitive bias after heuristics dealing is framing. According to Frensidy (2016), traditional finance assumes that framing is transparent. Behaviourists, on the other hand, have a different perspective; many of the frames are opaque enough that investors find it hard to understand. As a result, the choices made will be heavily influenced by the way the data is presented or framed. Based on the previous experiment, Frensidy (2016) described someone (suppose called Budi), in a different way by using the same information on two separate groups, groups A and B. According to group A, Budi is a clever, hardworking, impulsive, critical, obstinate, and jealous person; in contrast, group B describes Budi as a jealous, hardworking, critical, impulsive, and intelligent person. The groups' evaluation scores are shown to be highly influenced by the same Budi traits, but given in reverse order. The findings of the experiment show that the previously listed traits have a greater impact than the latter mentioned traits. Budi is rated far higher by Group A than by Group B. He maintained that two factors may explain such events. First, one's level of focus may decrease as the amount of information to be processed rises, which results in less attention being paid to the material that is put behind. Second, first perceptions are

typically given greater weight than subsequent facts. Anchoring bias is the result of these two factors (Kartini & Nahda, 2021).

2.2 Conceptual Review

2.2.1 Behavioural Finance

Since standard financial theory is insufficient to explain stock market oddities, the premise that investors are always rational has become a point of contention. Investors may disregard basic assessments and get drawn to stocks that are increasing in value at an unreasonably high rate under specific circumstances. Four presumptions form the foundation of conventional financial theory: (Nareshwar et al., 2021)

1. Rational Investors
2. Efficient Market
3. Investors design their portfolios according to the mean-variance portfolio rule
4. The expected return is based on a function of the risk itself.

Behavioural finance provides an alternative to these four foundations. First, the mean-variance portfolio rule is not followed by investors, markets are inefficient, projected returns are not solely dependent on risk, and typical investors are frequently irrational. A subfield of social psychology that focuses on the human aspect of decision-making is behavioral finance. The investment and the desired outcomes may be impacted by psychological considerations. Shefrin (2000) asserts that behavioral finance is the study of psychological elements that influence financial attitudes. Financial behavior, according to Hirschey and Nofsinger (2008), is the study of how people act while making financial decisions. (Ritter, 2003) distinguishes between two categories of financial behavior: cognitive (human thought) and arbitrage limitations (utilizing inefficient markets). Therefore, the study of how human psychology influences financial and investing decision-making is known as behavioral finance.

In behavioral finance, the first premise is that investors will reduce their anticipation of regret (regret). The second is a positive explanation that explains what has occurred: behavioral finance theory (ex-post). Third, according to prospect theory (Kahneman & Tversky, 1979), investors are loss averse. According to prospect theory, investors who are making money will become risk averse, while those who are losing money would become risk takers. Fourth, due to information processing mistakes, investors' forecasts are

frequently skewed. Fifth, investors look for profitable returns. Sixth, it is considered that investors consider psychological, social, and emotional factors while making judgments.

2.2.2 Risk Perception

There are several definitions of risk. One definition of risk is an unfavorable occurrence. The potential for outcomes to differ from expectations is another concept that financial analysts frequently employ. Cognitive biases resulting from thought patterns known as heuristics, which serve as short cuts to facilitate quick processing and simplification of information, frequently impact perceptions of danger. This heuristic frequently highlights the person's anxiety stemming from the potential for ignorance or powerlessness (Mc Daniels et al., 1995). Individual investors' perception of risk is their assessment of the amount of risk they will incur while making investing decisions. Individual behavior is significantly influenced by risk perception in an uncertain mentality. Perception of risk is highly influenced by each person's unique circumstances and psychological traits (Nareshwar et al., 2021).

Risk perception transcends the individual and is a social and cultural construct that is influenced by ideology, history, values, and symbols. Given the complexity and diversity of human social existence, it is not reasonable to assume that evaluations and scores on the same instruments have the same meanings in all circumstances (Riaz & Hunjra, 2015). "The starting premise of any theory of risk must be that everyone deliberately accepts risks," said Adams (1995). He concluded that the majority of the risk literature did not begin with this.

A communication tool called risk perception can help investors get ready to take on risk based on their knowledge and psychological characteristics (Rana et al., 2011). Individual investors have varying perspectives on risk, which influences how they think about and make decisions about their investments (Hallahan et al., 2004). Numerous investigations have concluded that an investor's attitude toward risk and perception of investment risk both influence their decision-making behavior and are significant mediators in investment decisions (Chen & Tsai, 2010).

The most significant factors influencing risk-related behavior are risk perceptions and risk predisposition. According to earlier empirical research on risk variables (Sitkin & Weingart, 1995), individuals with a high-risk propensity are more likely to view a scenario as low risk and, as a result, are more inclined to take a chance than those with a low risk propensity.

Previous research has shown that an investor's investing behavior is influenced by how they perceive risk. An investor's personality, degree of confidence, and rate of return all influence how they see and respond to risk. The higher the perceived risk, the more return they will want, meaning that the more return they need, the more systematic risk they will have to take (Singh & Bhowal, 2008). Taking this into account, it can be said that there is a positive relationship between risk propensity and the risk perception of decision-makers (Riaz & Hunjra, 2015).

A person's skewed assessment of the characteristics and seriousness of the hazards is known as their risk perception. One's view (perception) regarding the likelihood of risk—the potential for exposure to loss, injury, or danger—associated with engaging in a specific activity is known as perceived risk (Ricciardi, 2008). Attitudes, personal convictions, emotions, assessments, social and cultural norms, and dispositions are all components of risk perception. Equity investors make decisions based in large part on their sense of risk. As the focus has moved from intuition to measures and back again, risk perception has always mirrored the mood of the eras in which each culture has lived (Jain et al., 2023). The whole consequence of taking risks will depend on chance if people believe they have no control over their traits. It is well-known that most investors need control over the return from equity shares. Therefore, equity investments are perceived to be risky Mittal and Jhamb (2016).

Recent research has examined "perceived risk" in a number of domains, including stock markets, e-banking, and online consumer goods and services. There are other ways to measure and evaluate this view, though. For example, the consumer products sector prioritized financial, performance, or product risk (Dai et al., 2014; Forsythe & Shi, 2003); in contrast, the Internet banking sector concentrated on information, opportunity cost, time loss, and social risk (Kassim & Ramayah, 2015). Remarkably, attitudes about risk, such as risk-taking and risk aversion, were used to gauge risk perception in the financial industry (Barberis & Huang, 2001; Mayfield et al., 2008). The perceived risk of investing in types of stocks trading on the stock market has yet to be explored; particularly its direct and indirect impact on investment performance and intentions have not been studied in Vietnam. Three main research questions are therefore posed: "What new measures of perceived risk are investigated?" "How much does "perceived risk" affect investment performance and intentions directly?" and "How much does "perceived risk" affect investment intentions indirectly through investment performance?" Furthermore, the

primary goal is to first develop new measures of perceived risk associated with investing in different kinds of stocks on the Vietnamese stock exchange. The study next investigates the direct and indirect impacts of perceived risk on investment performance and intentions after confirming the validity and reliability of the new measures (Trang & Tho, 2017).

2.2.3 Overconfidence Bias

One common cognitive bias is overconfidence bias. In order to achieve their objectives, people with overconfidence bias overstate their knowledge, reasoning prowess, and accuracy of information (Bondt & Thaler, 1995) while underestimating the possible uncertainties. Investors that are overconfident believe their viewpoint is far more reliable than others' (Jain et al., 2019).

The propensity to have an inaccurate and deceptive opinion of our abilities, intelligence, or talent is known as overconfidence bias. A psychological bias known as overconfidence occurs when people overestimate their own accuracy or the likelihood that a particular event will transpire (Campbell et al., 2004; Glaser & Weber, 2010). The propensity to have an inaccurate and deceptive opinion of our abilities, intelligence, or talent is known as overconfidence bias. Overconfidence is when someone has irrational beliefs, intuitions, and decisions. This results from people believing they are smarter than they actually are or that they know more than others. According to Dobelli (2014), this circumstance is a measure of the discrepancy between people's actual knowledge and what they believe they know. An investor may believe that he is genuinely skilled if he has recently fared well. A winning run may be a sign of trading competence, but it might also just be the result of good fortune. in both situations. The investor may grow overconfident as a result. He or she could then decide to make more trades and take greater chances as a result.

A cognitive bias known as overconfidence causes investors to overestimate their capacity for making investments and frequently take needless risks. According to Parveen et al. (2020), overconfident investors are more likely to take a hazardous approach when making investing decisions since they have a positive risk perception. The study emphasizes how behavioral biases including anchoring, herd bias, mental accounting, and overconfidence bias may have a big impact on investors' decision-making. Wattanasan et al. (2020) investigate how psychological and emotional aspects influence investors' choices in the securities market, concentrating on biases including herding, degree of risk-taking, availability bias, conservatism bias, and overconfidence bias. They discover that investors'

mentality was significantly impacted by appreciation, which was followed by a decrease in taxation and revenue production (Almansour et al., 2023).

The influence of behavioral finance factors, such as overconfidence, on stock investing decision-making at the Amman Stock Exchange was examined in a study by Areiqat et al. (2019) According to a research, this implies that they intentionally seek investments with greater degrees of risk because they are confident in their skills. The effect of overconfidence on people's investing choices was investigated in a research by Abdin et al. (2017). The study's conclusions showed that overconfidence has a big impact on investing choices. This implies that people who are overconfident often make investing decisions that are impacted by their inflated sense of their own competence. According to the findings, overconfidence is among the most important Factors related to behavior that influence investing choices. The relationship between overconfidence and investment risk-taking is, therefore, mediated by perceived risk (Kirchler & Maciejovsky, 2002).

Compared to others, people believe they are more knowledgeable about the stock market and are able to forecast the actual path of stocks (Larrick et al., 2007). They underestimate hazards and overestimate their own knowledge and publicly accessible information (Barak, 2008; Etzioni, 2014). In essence, overconfidence is when investors overestimate their abilities and believe they perform better than they actually do. Overconfident investors ignore the danger involved in making investing decisions because they are self-assured about their knowledge and facts (Mirza et al., 2022; Prosad et al., 2017; Kamoto, 2014; Abdin et al., 2022). When it comes to individual financial decisions, optimism is the greatest method to convey the best potential outcome expectation (Iqbal, 2015). Investors exhibit reasonable inclinations and a great deal of self-confidence while trading assets; yet, they are biased against overconfidence bias (Huang et al., 2014). Advanced operating capabilities and investment decisions are sparked by overconfident behavior (Pachur et al., 2012; Darrat et al., 2007; Phan et al., 2018; Mushinada & Veluri, 2018; Khan et al., 2017). It degrades risk perception, investment decisions, and investment performance quality (Ahmad & Shah, 2020).

Occasionally, investors' irrational overconfidence bias has a negative effect on their investing choices (Siraji et al., 2021). Pakistani investors' reasoning is distorted by this overconfidence bias, which causes them to make more frequent yet ineffective investment decisions (Naveed & Taib, 2021). Furthermore, a major consideration in Pakistani investing choices is overconfidence bias (Aftab, 2020; Katper et al., 2019). The investing

choices made by Pakistani investors are directly explained by this cognitive bias (Quddoos et al., 2020; Chhapra et al., 2018; Ishfaq et al., 2020; Khan et al., 2021; Rehan & Umer, 2017). Nonetheless, overconfidence has a negligible impact on investment decisions, according to Adil et al. (2022).

The better-than-average impact is the second indicator of overconfidence. It refers to the idea that people have inflated views of themselves and think they are better than average. The pros' mistakes have to do with how long their confidence intervals are. Professionals' risk-taking behavior is significantly impacted by their perception of risk and their level of confidence (Broihanne et al., 2014). Overconfident decision-makers regard their presumptions as truth. They might not be aware of the ambiguity surrounding conclusions drawn from such presumptions. As a result, they can mistakenly believe that a particular course of action is safe. The overconfidence bias reduces a person's assessment of a strategy's level of risk (Ahmed et al., 2022).

Evidence suggests that overconfidence is particularly significant when deciding whether to launch a business. More overconfidence is shown by entrepreneurs than by managers. Despite the fact that their study looked at entrepreneurs after they launched a business, an inclination toward overconfidence could have influenced these entrepreneurs when they were first assessing the riskiness of the initiatives (Ahmed et al., 2022).

2.2.4 Anchoring Bias

The human tendency to base financial decisions on discrete information (such as news, trading volumes, and one-day returns) is known as anchoring (Andersen, 2010). An investor tends to base their investing choices on arbitrary pricing levels. Investors with this bias often use historical data to fix prices (Waweru et al., 2008). As a result, investors could have to be more punctual and hence have to choose between paying more for the scripts or selling them for less (Jain et al., 2023).

The tendency of investors to forecast value by assuming the "starting value" or default figure is known as anchoring (Pompian, 2011). Representativeness and anchoring are related in that investors use their previous experiences to guide them, becoming hopeful when the market is rising and gloomy when it is falling (Shiller, 1999). Investors use past stock prices as anchors to forecast future stock values. The human propensity to base financial choices on a single piece of information (such as news, trading volumes, or one-day results) is known as anchoring (Andersen, 2010). Because such information captures

their attention and encourages them to believe that popular stocks are valuable, investors with anchoring bias tend to concentrate largely on these stocks. Anchoring heuristics, according to Tversky and Kahneman (1974), happen when trustworthy information is lacking rather than when the initial value is provided. Anomalies in the stock market arise as a result of investors using historical price patterns as "anchors" to predict future profits. Investors can use historical patterns to estimate the company's earnings (Waweru et al. 2008). When people assess conjunctive and disjunctive events, an intriguing relationship between anchoring bias and risk perception emerges. Juliana and associates (2022). Probabilities in the case of conjunctive events are usually overestimated, whereas probabilities in disjunctive events are often underestimated (Jain et al., 2023).

One heuristic that has been borrowed from psychology is overconfidence. Individuals with overconfidence bias typically exaggerate their talents, abilities, and expertise (Hvide, 2002). Furthermore, overconfident investors overestimate their expertise and underestimate the danger associated with an investment, according to Nofsinger (2017). Investors that are overconfident engage in excessive stock market trading (Evans, 2006). Those who are overconfident tend to have unrealistically good views of themselves and firmly feel they are above-average persons (Cooper et al., 1988; Taylor & Brown, 1988). Professionals' risk-taking behavior is significantly impacted by both overconfidence and risk perception (Broihanne et al., 2014). Investors with overconfidence bias disregard publicly accessible information and depend more on their own information, according to Chuang and Lee (2006). Overconfident investors experience both good and negative surprises, which leads to inaccurate projections and inefficient financial markets (Shefrin & Thaler, 1988). Overconfidence bias is one of the most important factors affecting the decision-making of individual equities investors, according to Jain et al. (2019).

2.2.5 Herding Bias

The behavior of individual investors behaving collectively without centralized guidance is known as herding bias. This type of phenomenon happens during religious gatherings, judgments, opinion formation, and financial or investment decisions. This is the most frequent error made by investors, who frequently adopt the investing choices made by the majority (Hamid & Arfeen, 2020).

The degree to which stock returns are seen as risky causes herding behavior (Shah et al., 2017). When it comes to their investing requirements, the majority of investors follow the

herd or are biased toward overconfidence. The low-risk inclination or risk avoidance of investors, who wish to reduce the danger of loss, is the cause of this herding behavior (Ullah & Elahi, 2014). Herding causes sensible individuals to act irrationally by imposing their opinions on others while they are making financial decisions (Kumar & Goyal, 2015). They accept the advice of others because they don't want to incur the risk of investing or because they don't know how to do it (Islam, 2012). Huang et al. (2016) discovered a robust correlation between institutional investors' herding behavior and risk and return. Bekiros et al. (2017) examine how risk and uncertainty affect herding behavior. The study concluded that in the US stock market, herd mentality wins out. It demonstrates how herding behavior was observed in large numbers during the financial crisis but was negligible during the uncertainty/risk crisis.

Furthermore, in Pakistani microfinance organizations, herding considerably reduces risk. In impoverished locations where individuals lack investment and perceive greater risk, microfinance encounters increased herding behavior under uncertainty (Monne et al., 2016). Therefore, investors' perceptions of risk and decision-making are impacted by herding behavior. The study detects and hypothesizes a relationship between risk perception and herding behavior.

Balcilar et al. (2013) claim that herding behavior results from the impact of risk perception on stock returns. When making judgments about their investments, many investors tend to follow the herd or have overconfidence biases. The low-risk inclination or risk avoidance of investors, motivated by their need to reduce the danger of financial loss, is the source of this herding behavior (Dickason et al., 2018). Herding causes ordinarily intelligent people to become irrational by depending on the opinions of others. Either a lack of financial knowledge or a tendency to accept the advice and views of others might be the cause of this behavior (Wattanasan et al., 2020).

A strong link between risk-return dynamics and herding behavior is shown by Balcilar et al. (2014). The authors found that when market volatility and uncertainty are high, herding behavior tends to rise. Because investors are more inclined to base their selections on market sentiment than on an unbiased risk assessment, this increased herding behavior increases the potential dangers connected with investing. According to Bekiros et al. (2017), herding behavior is common in the US stock market and is examined in connection to risk and uncertainty. According to Dickason et al. (2018), risk perception has a substantial mediating role in the link between behavior characteristics and investment

success. Likewise, Mundi et al. (2022) demonstrate that the association between overconfidence and investing choices may be explained by individual variations in risk perception. According to further research by Zhang et al. (2022) and Lim et al. (2018), risk perception influences the connection between investment decision-making and behavioral finance parameters. According to S. U. Ahmed et al. (2022), the association between investment decisions and herding behavior is not mediated by risk perception. According to other research, individual investors' behavioral biases and their perception of risk are negatively correlated (Areiqat et al., 2019; Gonzalez-Igual et al., 2021; Hossain & Siddiqua, 2022; Zhang et al., 2022). The implication is that the likelihood of investors facing behavioral biases decreases as risk perception rises.

The psychological factor that influences an investor's choices is called herding (Abul, 2019). In an asymmetrical disorder in financial markets, it is human nature for people to remark, observe, and mimic one another's behavior (Rompotis, 2018). But because of herding, they are forced to make illogical investing judgments. They want to accurately speculate and follow the other investors with confidence. Herd behavior describes how a group of individuals behaves and makes investments as a whole (Braha, 2012).

It is believed that during panics, investors abandon their own investing decisions and instead follow other investors in the belief that others have more knowledge about market behavior (Gao et al., 2021). Their fear of losing money and greed make them hesitant to invest (Landberg, 2003). Under the influence of other investors, investors typically take similar actions while investing in equities. This occurs as a result of inactive and unskilled investor behavior (Persaud, 2000). Some agents are capable of herding, a behavior in which they follow those who have the most knowledge (Mello et al., 2010). Investors that follow other investors tend to limit their options. The stock market is overrun by herding, as seen by market oddities and bubbles (Mertzanis & Allam, 2018).

Every individual investor is influenced by the positive feedback method to follow the herd when it comes to purchasing and disposing of stocks amid favorable market movements (Kim & Ryu, 2021). In a bull market trend, herding behavior interacts adversely; in a bear market trend, it interacts favorably (Shah et al., 2019). Herding behavior has a big impact on investment decision-making (Raheja & Dhiman, 2019; Boda & Sunitha, 2018; Almansour & Arabyat, 2017; Dominic & Gupta, 2020). According to Shah et al. (2017), there is herding in the Pakistani stock market, which has an impact on investments. However, in certain situations, this herding behavior has little impact on the investing

choices (Ahmed et al., 2022). The investing preferences and policies of stockholders are unaffected by herding behaviors. In these circumstances, investors' feelings are consistent with the "slow climb and rapid collapse" phenomena (Gong et al., 2022). Herding is more noticeable in the market when prices are down. In Pakistan, investors' investment decisions are more likely to exhibit herding behavior (Aftab, 2020; Katper et al., 2019). Herding prejudice, however, has little impact on Pakistani investors' choices on their investments (Ahmed et al., 2022; Quddoos et al., 2020).

2.2.6 Loss Aversion Bias

The aversion to loss Both behavioral finance and social psychology include theories on bias. In this case, the investor's perspective is more important than the likelihood of a loss. Generally speaking, investors react more strongly to a loss than to a gain of the same absolute value (Hamid & Arfeen, 2020). Amos Tversky and Dinal Kahneman (1979) identified loss aversion as the main concept of prospect theory.

One way to feel regret is through loss aversion. An investor may be influenced by loss aversion bias to overestimate potential short-term losses and underestimate long-term returns and diversification gains. There is a propensity for investors to prioritize preventing losses above generating profits since they are so terrified of losing money. Loss aversion is more likely to develop in people who have suffered losses more frequently. One example would be holding onto a stock when your current reasonable examination of it makes it obvious that it should no longer be used as an investment. Or selling a stock that has somewhat increased in value in order to make any kind of gain when your analysis suggests that the stock should be retained for a far bigger profit (Jameel & Siddiqui, 2019).

People who suffer from loss aversion are more sensitive to losses than to gains, which implies that changes from reference points may be valued differently depending on whether they are gains or losses. According to this hypothesis, the overall degree of demand shift brought on by a loss is more than the corresponding effect of an equal gain (Nicolau, 2008). People are more prone to be sensitive to a decline in their wealth than to a rise in it, a phenomenon known as loss aversion (Thaler et al., 1997). A central claim of most financial theories has been that investors are rational.

Because they are based on solid financial knowledge, facts, and information, classic financial theorists frequently believe that investment judgments are logical. Despite behavioral finance's assertion that human nature is illogical due to customs, beliefs, and

conventions, the fact that people deviate from it shows that it is flawed in its ability to make decisions (Tversky & Kahneman, 1974). Investor judgments are always influenced by psychological biases. According to Froot and Dabora (1999), the price of identical shares and securities varies because people differ in their personalities and the emotions they consider while making decisions. In his research on fund managers, Nikiforow (2010) discovered that even extremely successful training cannot alter people's irrationality in decision-making since emotion will always be there. Because people differ in their personalities, psychological biases have different effects on different people (Charles et al., 2001; Orgeta, 2009; Yeung et al., 2011).

Classical financial theory serves as the foundation for behavioral finance, but it rejects the conventional finance ideas' presumption that investors are logical. While traditional finance claims that investors are rational in their investment decisions and that they are regarded as rational actors in the financial market, behavioral finance asserts that investors also consider their emotions and beliefs in addition to their financial knowledge when making decisions (Barber & Odean, 2000). This renders the investor's decisions irrational, and the term used to describe this irrationality in the decision-making process is "narrow framing" (Ahmed et al., 2022).

Pompian (2006) defines loss aversion as the propensity to favor avoiding losses above achieving comparable benefits. A propensity known as loss aversion occurs when investors prioritize preventing losses above generating profits because they are so terrified of suffering losses. Loss aversion is more likely to develop in people who have suffered losses more frequently. Investors experience the agony of a loss more than twice as strongly as they do the ecstasy of a profit, according to research on loss aversion. Prospect theory suggests that investors are loss-averse rather than risk-averse, which has given rise to the idea of loss aversion. Losses have a more psychological impact than gains, which is why this happens. In other words, possible losses often cause investors greater anxiety than potential gains of the same magnitude. As a result, they will invest more wisely to lower the chance of losses (Kartini & Nahda, 2021).

2.2.7 Investor Sentiments

The subjective opinions that investors have about an objectively evaluated or priced stock are known as investor sentiment. There is a claim that stock prices and returns may be impacted by investor emotion (Shefrin, 2008). Because it is thought to have the ability to

explain asset prices and volatility that have confounded conventional models, investor sentiment is a phenomenon that is becoming more and more significant. Investor sentiment, according to Baker and Wurgler (2007), is the expectation of future cash flow that is not backed up by data. To put it another way, investors forecast objectively priced assets, which causes them to deviate from their intrinsic value. Zhang (2008) asserts that emotions are investors' irrational expectations and ideas about assets that take the role of basic evidence. The market's bewildering, abrupt price swings can be explained by this behavior. As a result, when investors disregard objective information, they run the danger of receiving less than ideal-returns on their investments. According to Hu and Wang (2013), sentiment is the biased perception of objective data, which means that investor predictions for future asset values may be based more on intuition and sentiment than on reason. Because it is thought to influence investing decisions and returns, investor sentiment is significant (Saiti et al., 2023).

2.3 Empirical Review

Abbas and Noor (2024) analyzed the firm-level investor and risk: insight from behavioural finance. The study's main purpose was to analyze the investor sentiment, attention and types of risk incurred after specific events like scams etc. The researcher used descriptive statistics, correlation analysis and regression analysis to analyze the collected data and information. The study explained the psychological and behavioral foundations of market dynamics by demonstrating how firm-specific emotion and attention impact risk measurements. Due to investor emotions and attention, financial oddities such as frauds have an impact on market results. Since risk perceptions have the power to compel sentiment, behavioral and psychological aspects must be taken into consideration in integrated financial analysis models. Event studies show that financial scandals have an impact on both firm-specific and market-wide factors. Investors, regulators, and business managers may enhance market and regulatory procedures with the use of these insights. This study examined the effects of financial scams on firm-specific and market-wide factors using theory and practice both during and after the occurrence.

Matveeva et al. (2024) conducted research on the determinants of financial behaviour or individual investors: In the context of financial literacy, overconfidence and herding. The main purpose of the study was to articulate the association of Financial Literacy, overconfidence and herding bias of individual investors with their financial behaviour. The researcher used Partial Correlation and Hierarchical Regression Tests to analyze the data

and information. The results showed that overconfidence and herd mentality have a detrimental effect on investors' financial behavior, whereas only financial literacy had a clear positive correlation. Policymakers and financial institution management may use the study's conclusions as a reference for creating investment policies that address people's financial behavior.

Abideen et al. (2023) analyzed the do behavioural biases affect investors' investment decision-making: evidence from the Pakistan Equity Market. The main purpose of the study was to investigate the impact of behavioural biases on investors' investment decision-making in the Pakistani equity market, as well as the roles that market anomalies and financial literacy play in the decision-making process. Descriptive statistics and correlation analysis were used to analyze the data and information. The findings demonstrated the mediating functions of certain market anomalies in the relationship between the investors' investment decision-making and behavioral biases. Additionally, empirical data showed that financial literacy influences investors' judgments by moderating the relationship between behavioral biases and market anomalies. Our findings demonstrated the significance of financial literacy in terms of both the stability of the stock market as a whole and the best investment decision made by individuals, even though the results were equivocal on the links between several factors.

Almansour et al. (2023) investigated the behavioural finance factors and investment decision: a mediating role of risk perception. The main aim of the study was to examine the impact of behavioural finance factors on investment decisions in the Saudi equity markets through the mediating variable of risk perception. Structural Equation Modelling (SEM) was used to analyze the data and information. The findings demonstrated that risk perception was significantly improved by herding, disposition effect, and blue-chip bias. Only investment decision-making was significantly improved by overconfidence; risk perception was not. Investment decision-making was revealed to be substantially positively correlated with risk perception. Through risk perception, all four behavioral finance aspects significantly improved investment decision-making.

Jain et al. (2023) analyzed the Heuristic biases as mental shortcuts to investment decision-making: a mediation analysis of risk perception. The study's main purpose was to explore the mediating role of risk perception on the relationship between heuristic biases and individual equity investors' decision-making. Partial Least Square Structural Equation

Modelling (PLS-SEM) was used to analyze the collected data and information. The current study's findings provide important light on the various behavioral biases of stakeholders, including equity investors, financial advisors, and legislators, as well as capital market players. Only the heuristic biases of individual equities investors were used in this study. Individual stock investors' investing choices, however, may be influenced by a wide range of other circumstances in the actual world.

Saiti et al. (2023) investigated the sentiment, risk appetite and stock return of individual investors at the Nairobi Securities Exchange. The main purpose of the study was to investigate the effect of risk appetite on the relationship between investor sentiment and stock returns of individual investors at the Nairobi Securities Exchange. The regression analysis was used to analyze the data. The study used a correlational descriptive survey and a positive orientation. A systematic questionnaire was used to gather primary data, and 70.3% of respondents answered it. Using stepwise regression, the study found that the association between emotion and stock returns of individual investors at the NSE was not mediated by risk appetite.

Ahmed et al. (2023) studied the mediating role of risk perception between behavioural biases and investors' investment decisions. The main purpose of the study was to examine the direct and indirect links between behavioural biases and investor’s investment decisions via the mediating role of risk perception. The researcher used structural equation modelling to analyze the data. The results showed that blue-chip stocks and investing choices are mediated by risk perception. Additionally, the disposition effect, investment decisions, and herding bias were not mediated by risk perception. Nonetheless, there was a robust correlation between risk perception and the disposition effect. Individual investors benefited from the study as they are able to make judgments about their investments based on their own estimations rather than those of others. To counteract these prejudices, investors need have the required training and knowledge. When making investing decisions, risk is the main deterrent, but blue-chip stocks were a significant risk-eliminating factor. The majority of earlier research concentrated on individual investors' investment choices and behavioral biases, but this study added to the mediating role of risk perception. Human capital, anomalies, computer literacy, and artificial technology could also be used as a mediator and moderators for future orientation.

He (2022) conducted a research on the asymmetric impacts of individual investor sentiment on the time-varying risk-return relation in the stock market. The main purpose of the study was to investigate the impact of investor sentiments, including individual sentiment and market-wide sentiments, on time-varying risk-return tradeoffs in the US stock market. The researcher used quantile regression to analyze the data. The findings demonstrated the heterogeneity of the individual sentiment effect by demonstrating that the sentiment of an individual has a substantial negative impact on the time-varying risk-return tradeoff across all quantiles. In particular, the time-varying risk-return tradeoff is weakened by positive individual sentiment and strengthened by negative individual sentiment. Additionally, at quantiles (0.25, 0.75), the impacts of individual sentiment are asymmetric; that is, a negative individual emotion linked to bad news has a greater influence than a positive individual sentiment linked to good news. These results hold up well against individual feelings and other estimation techniques. The research indicates that the individual sentiment is more significant and beneficial in determining the stock price and fluctuation, while the time-varying risk-return tradeoff is less susceptible to the market-wide sentiment.

Kartni and Nahda (2021) examined on the behavioural Biases on investment decisions: A Case study in Indonesia. The main objective of the study was to investigate the influence of various psychological factors on investment decision-making. The researcher used Descriptive Statistics, and One Sample T-Test to analyze the collected information and data. The research findings showed that all of the variables, anchoring bias, representativeness bias, loss aversion bias, overconfidence bias, optimism bias, and herding behaviour had a significant effect on investment decisions.

Nareswari et al. (2021) conducted research on the effect of behavioural biases on risk perception. The main purpose of the study was to test the role of behavioural biases (sentiment, overconfidence, salience, overreaction, herding, and disposition effect) on risk perception. Validity and Reliability Test was used to analyze the data. The outcome demonstrated that risk perception was positively impacted by investor mood and overconfidence. On the other hand, risk perception was negatively impacted by disposition, herding, and overreaction effects. This finding suggested that investors may perceive risk in two ways due to behavioral biases: as a danger or an opportunity.

Saivasan and Lokhande (2021) analyzed the influence of risk propensity, behavioural biases and demographic factors on equity investors' risk perception. The main purpose of

the study was to identify key psychological and demographic factors that influence risk perception. The researcher used multiple regression analysis to analyze the data. The study's conclusions demonstrated that there was proof of the connection and impact of demographic characteristics on behavioral bias and risk propensity. The results of this study showed that the risk propensity construct—which is defined by return expectation, time horizon, and loss aversion—varies greatly depending on demographic characteristics. The behavioral bias construct is defined by familiarity, overconfidence, anchoring, and experiencing biases, all of which vary among demographic groups. These elements affect a person's sense of risk when it comes to stock investments.

Sajid and Bhardwaj (2021) studied on the relationship between demographic variables, behavioural biases, and risk tolerance of individual investors: a literature review. The main purpose of the study was to study behavioural biases' susceptibility due to demographic factors (gender, income, age, and education) through a review of the available literature. The researcher used multiple linear regression analysis to analyze the data and information. This study categorized the body of research on behavioral biases and demographic variables and concluded that the field is still in its infancy. It is well known that behavioral biases are influenced by demographic characteristics such as gender, income, age, and education. Out of all the biases resulting from demographic variables, overconfidence is the most vulnerable. The study uses secondary data to examine gender, age, income, education, and behavioral biases, but it has not examined all demographic characteristics. Although it is difficult to address every bias in a single research using primary data, the authors have made every effort to address the majority of the biases in the secondary data.

Shafqat and Malik (2021) analyzed the role of regret aversion and loss aversion emotional biases in determining individual investors' trading frequency: moderating effects of risk perception. The main purpose of the study was to investigate the moderating effect of risk perception on the relationship between emotional biases (i.e., regret aversion and loss aversion) and the trading frequency of individual investors in the context of the Pakistan Stock Exchange (PSX). The researcher used Multiple Linear Regression, and Structural Equation Modelling (SEM) to analyze the data and information. The findings showed that the frequency of trading by individual investors is negatively and statistically significantly impacted by regret and loss aversion. On the other hand, the frequency of trading by individual investors is positively and negligibly impacted by risk perception. Furthermore, the association between these two emotional behavioral biases is found to be moderated by

risk perception. According to this study, individual investors' trading frequency is caused and moderated by their emotional biases and perceptions of risk. To help individual investors deal with these emotional biases and risk perception, regulatory organizations like the Securities and Exchange Commission of Pakistan (SECP) and PSX can start training programs. This might lead to an increase in the stock market's market capitalization.

El-Hussein and Abdelgadir (2020) examined the behavioural biases in individual investment decisions: is it a common phenomenon in the stock market? The main purpose of the study was to investigate the behavioural factors that influence individual investment decision making at developing country's stock market. The researcher used correlation analysis and regression analysis to analyze the data and information. Regardless of the level of stock market development, the paper's findings demonstrated that behavioral biases significantly influence individual investing decision-making processes. The study showed that the Khartoum Stock Exchange's individual decision-making process is heavily influenced by market and heuristic variables. Representativeness, overconfidence, anchoring, historical stock costs, customer preferences, loss aversion, mental accounting, other investors' trading volume, and quick response to shifts in other investors' choices are some of the factors that significantly influenced the decision-making process for individual investments. Availability bias, stock price changes, regret aversion, and other investors' judgments and choices are some of the factors that had a negligible effect.

Hamid and Arfeen (2020) conducted a research on the impact of behavioural biases and demographic factors on the financial risk tolerance of individual investors with the moderating role of personality traits at the Pakistan Stock Exchange. The main purpose of the study was to investigate which behavioural finance biases and demographic factors are associated with a certain level of financial risk tolerance with the moderating effect of investor personality traits. The researcher used Structured Equation Modelling to analyze the collected data and information. The study's findings indicate that 45 moderating combinations were found for individual investors in the Pakistan Stock Market based on the interactions of nine behavioral finance biases. The influence of behavioral finance biases on the dependent variable of financial risk tolerance is significantly altered by 42 moderating effects out of 45 moderating combinations of personality characteristics with independent variables of behavioral finance biases. However, seven of the nine behavioral finance biases significantly affect the dependent variable of financial risk tolerance. It is also acknowledged that none of the controlling demographic factors significantly

influences the dependent variable of financial risk tolerance. This study will be helpful for retail investors, regulators, policymakers, and investment companies to sketch their investors and to offer more refined investment opportunities.

Nosita et al. (2020) conducted research on the impact of demographic factors on risk tolerance. The main purpose of the study was to analyze the role of demographic factors in the willingness to take risks. The research used regression analysis to analyze the data. The result showed that to conduct an education program and increase society's knowledge, the Government of the Republic of Indonesia, especially to Indonesia Stock Exchange and Securities Firms should pay attention to demographic factors and fit the investment product with the investor's profile.

Malik et al. (2017) explored the impact of overconfidence and loss aversion biases on investor decision-making behaviour: the mediating role of risk perception. The study's primary goal was to examine how behavioral biases, overconfidence, and loss aversion affect individual equities investors' decision-making processes while taking risk perception into account as a mediating factor. The data was analyzed using regression analysis and descriptive statistics. The outcome showed that loss aversion bias and overconfidence had an impact on investors. Both biases made a big difference.

Trang and Tho (2017) analyzed the perceived risk, investment performance and intentions in emerging stock markets. The main purpose of the study was to explore the effects of perceived risk on investment performance and intentions of individual investors. The researcher used Cronbach's Alpha to analyze the data. The findings demonstrated that investing performance and intentions were positively impacted by perceived risk. Through investing performance, perceived risk also indirectly influenced investment intentions. Investors are more happy with their recent rate of return, their perception of the dangers associated with certain stock kinds, and their intention to make further investments in the future. In order to draw more investors to the stock market, securities firms frequently held seminars, workshops, or training courses on the various stock investment types, promptly updated stock investment rules, and enhanced the caliber of listed businesses.

Yuliani et al. (2017) researched the risk perception and psychological behaviour of investors in an emerging market: Indonesian Stock Exchange. The main purpose of the study was to investigate the investor's psychology on buying and selling common stock in the stock exchange in emerging markets. To examine the information and data gathered,

the researcher employed correlation analysis and descriptive statistics. The results of the study demonstrated that psychology and risk perception had a major impact on confidence. Additionally, confidence has a very favorable effect on performance. Since the psychological behavior of the investor has not been fully addressed by this research, an extra variable may be required to fully reflect the investor's psychology. Experiments may be used in future research, beginning with stock purchases and considerations to be taken into account when selling stocks.

Subramaniam and Athiyaman (2016) studied the effect of demographic factors on investor's risk tolerance. The main purpose of the study was to identify the relationship between demographic factors and investor's risk tolerance. The researcher used Chi-square and correlation analysis to analyze the data and information. The result revealed that demographic factors such as age, education, investment experience and income of the investors were correlated with their risk tolerance and; gender, occupation and civil status are not related to risk tolerance.

Chattopadhyay and Dasgupta (2015) analyzed the demographic and socioeconomic impact on risk attitudes of Indian investors – an empirical study. The study's primary goal was to determine whether an individual investor is risk-averse or risk-prone by examining the crucial roles that age, gender, marital/social status, number of dependents, educational background, employment and income status, savings pattern, future financial planning, investment amount, and investment returns play in determining risk tolerance. To examine the information and data, the researcher employed the binary logit model. According to the report, investors are extremely risk averse and often have limited risk tolerance. According to the hypotheses, married investors with children and dependents were more risk averse than their unmarried counterparts with fewer dependents; higher education encouraged risk tolerance, making investors more risk prone; and older investors were more risk averse than younger, less experienced ones. Furthermore, future planning raised risk aversion, but higher income and savings were linked to decreased risk aversion. Additionally, the study found that greater returns and larger investment quantities raised risk tolerance and decreased risk aversion. Contrary to predictions, however, women were shown to be more risk-prone than males, and investors' risk attitudes were not significantly impacted by their work level.

Gumus and Davioglu (2015) investigated an analysis of the socioeconomic and demographic factors that have an effect on the risk-taking preferences of personal investors. Examining the aforementioned demographic, social, and economic factors that might influence the risk-taking tendencies of individual investors operating in Borsa Istanbul (BIST) was the primary goal of the study. The data and information were analyzed by the researcher using ANOVA, frequency, and percentage. In the analyses done within this scope, it has been demonstrated that the factors discussed above except marital status all had a significant effect on the risk perception of individual investors during their portfolio investments.

Raiz and Hunjra (2015) explored the relationship between psychological factors and investment decision-making: the mediating role of risk perception. The main purpose of the study was to examine the role of various psychological factors which affect investment decisions of Pakistani investors. To examine the data and information, the researcher employed structural equation modeling. The results and general discussion concluded that an investor's behavior is influenced by the way the information that is available to them is presented to them and how likely they are to take risks when making decisions. As a result, these factors play a major role in determining an investor's investment style.

Savim and Rahman (2015) analyzed the relationship between individual investor sentiment, stock return and volatility: evidence from the Turkish Market. The main purpose of the study was to examine the impact of Turkish individual investor sentiment on the Istanbul Stock Exchange (ISE). The researcher used Vector Autoregression (VAR) to analyze the collected data and information. The outcome shown that ISE results are significantly positively impacted by unforeseen shifts in both rational and irrational investor opinion. This implies that ISE results are often higher when investor sentiment is favorable. The study also shows that ISE volatility is significantly impacted negatively by an unexpected rise in the rational component of Turkish investor sentiment. This can signal that investors have high forecasts about the economy generally considering market fundamentals in Turkey. Positive expectations, less uncertainty, and a decrease in the volatility of stock market returns are all possible outcomes of this optimism. In any case, while developing investing strategies, investors should be aware of the effects of irrational investor attitudes. In order to lessen stock market volatility and uncertainty, officials may find the study's findings useful in stabilizing investor mood.

Table 1

Summary of Empirical Review

Authors	Topic	Objective	Methodology	Findings
Abbas and Noor (2024)	Firm-level investor sentiment and risk: Insight from behavioural finance	To analyze the investor sentiment, attention and types of risk which are incurred after specific events like scams etc.	Descriptive Statistics, Correlation Analysis, Regression Analysis	The study showed how firm-specific sentiment and attention affect risk measures, explaining market dynamics' psychological and behavioural underpinnings. Financial anomalies like scams affect market outcomes due to investor sentiment and attention. Sentiment can be forced through risk perceptions, so integrated financial analysis models must account for behavioural and psychological factors.
Matveeva et al. (2024)	Determinants of financial behaviour or individual investors: in context with financial literacy, overconfidence and herding	To articulate the association of Financial Literacy, overconfidence and herding bias of individual investors with their financial behaviour.	Partial Correlation, Hierarchical Regression Tests	The findings revealed that only investor's Financial Literacy have a strong positive association with their financial behaviour whereas overconfidence and herding bias have a negative impact.
Abideen et al. (2023)	Do behavioural biases affect investors' investment decision-making? Evidence from the Pakistani Equity Market	To investigate the impact of behavioural biases on investors' investment decision-making in the Pakistani equity market, as well as the roles that market anomalies and financial literacy play in the decision-making process	Descriptive Statistics, Correlation Analysis,	The additional analyses confirmed the mediating roles of certain market anomalies in the association between the investors' behavioural biases and their investment decision-making. Furthermore, empirical evidence revealed that financial literacy moderates the association between behavioural biases and market anomalies, eventually

				influencing investors' decisions.
Almansour et al. (2023)	Behavioural finance factors and investment decisions: a mediating role of risk perception	To examine the impact of behavioural finance factors on investment decisions in the Saudi equity markets through the mediating variable of risk perception	Structural Equation Modelling (SEM)	The results showed that herding, disposition effect, and blue-chip bias had a significant positive impact on risk perception. Overconfidence had a significant positive effect only on investment decision-making, but not on risk perception. Risk perception was found to be significantly positively related to investment decision-making. All four behavioural finance factors had a significant positive indirect effect on investment decision-making through risk perception.
Jain et al., (2023)	Heuristic biases as mental shortcuts to investment decision-making: a mediation analysis of risk perception	To explore the mediating role of risk perception on the relationship between heuristic biases and individual equity investors' decision-making	Partial Least Square Structural Equation Modelling (PLS-SEM)	The result of the present study provided valuable insights into the different behavioural biases of capital market participants and other stakeholders such as equity investors, financial advisors, and policymakers. The present study solely relied on the heuristic biases of individual equity investors. However, in the real world, many other factors may impact the investment decisions of individual equity investors.
Saiti et al. (2023)	Sentiment, risk appetite and stock returns of individual investors at the Nairobi Securities Exchange	To investigate the effect of risk appetite on the relationship between investor sentiment and stock returns of individual	Regression Analysis	The study adopted a positive orientation and a correlational descriptive survey. Primary data was collected using a structured questionnaire and the response rate was 70.3 %. The study using stepwise

		investors at the Nairobi Securities Exchange		regression established that risk appetite had no mediating effect on the relationship between sentiment and stock returns of individual investors at NSE.
Ahmed et al. (2022)	Mediating the role of risk perception between behavioural biases and investor's investment decisions	To examine the direct and indirect links between behavioural biases and investor's investment decisions via the mediating role of risk perception	Structural Equation Modelling	The findings contributed that risk perception mediates between blue-chip stocks and investment decisions. Furthermore, risk perception did not play the mediating role between herding bias, disposition effect, and investment decisions. However, the disposition effect had a strong direct relationship with risk perception.
He (2022)	Asymmetric impacts of individual investor sentiment on the time-varying risk-return relation in the stock market	To investigate the impact of investor sentiments, including individual sentiment and market-wide sentiments, on time-varying risk-return tradeoffs in the US stock market	Quantile Regression	The results showed that the individual sentiment has a significant negative effect on the time-varying risk-return tradeoff across all quantiles, indicating the heterogeneity of the individual sentiment effect. Specifically, the positive individual sentiment weakens the time-varying risk-return tradeoff while the negative individual sentiment enhances it. Besides, there are asymmetric effects of the individual sentiment at quantiles (0.25, 0.75), that is, a negative individual sentiment associated with bad news has a stronger impact than a positive individual sentiment associated with good news.
Kartni and Nahda (2021)	Behavioural Biases on investment	To investigate the influence of various	Descriptive Statistics, One Sample T-Test	The research findings showed that all of the variables, anchoring bias,

	decision: A Case study in Indonesia	psychological factors on investment decision-making		representativeness bias, loss aversion bias, overconfidence bias, optimism bias, and herding behaviour had a significant effect on investment decisions.
Nareswari et al. (2021)	The effect of behavioural biases on risk perception	To test the role of behavioural biases (sentiment, overconfidence, salience, overreaction, herding, and disposition effect) on risk perception	Validity and Reliability Test	The result showed that investor sentiment and overconfidence had a positive effect on risk perception. Meanwhile, overreaction, herding, and disposition effects had negative effects on risk perception.
Saivasan and Lokhande (2021)	Influence of risk propensity, behavioural biases and demographic factors on equity investors' risk perception	To identify key psychological and demographic factors that influence risk perception	Multiple Regression	The findings of the study showed that there was evidence of the relationship and influence of demographic factors on risk propensity and behavioural bias. From this study, it was apparent that return expectation, time horizon and loss aversion, which define the risk propensity construct, vary significantly based on demographic traits. Familiarity, overconfidence, anchoring and experiential biases which define the behavioural bias construct differ across demographic categories. These factors influence the risk perception of an individual concerning equity investments.
Sajid and Bhardwaj (2021)	Relationship between demographic variables, behavioural biases, and risk	To study behavioural biases' susceptibility due to demographic factors (gender,	Multiple Linear Regression	This paper classifies the existing literature on demographic factors and behavioral biases and finds that the same area's research output is at a

	tolerance of individual investors: a literature review	income, age, and education) through a review of the available literature		nascent stage. It is recognized that gender, income, age, and education (demographic factors) influence behavioural biases. Overconfidence is the highest susceptible bias among all biases caused by demographic factors. The study has not focused on all demographic factors; it focuses on gender, age, income, education, and behavioural biases using secondary data.
Shafqat and Malik (2021)	Role of regret aversion and loss aversion emotional biases in determining individual investors' trading frequency: moderating effects of risk perception	To investigate the moderating effect of risk perception on the relationship between emotional biases (i.e., regret aversion and loss aversion) and the trading frequency of individual investors in the context of the Pakistan Stock Exchange (PSX)	Multiple Linear Regression, Structural Equation Modelling (SEM)	The results depict that regret aversion and loss aversion have statistically significant and negative impacts on individual investors' trading frequency. Whereas, risk perception has an insignificant & positive impact on individual investors' trading frequency. Moreover, risk perception is found to moderate the relationship between these two emotional behavioural biases.
Elhussein and Abdelgadir (2020)	Behavioural biases in individual investment decisions: is it a common phenomenon in the stock market?	To investigate the behavioural factors that influence individual investment decision making at developing country's stock market	Correlation Analysis, Regression Analysis	The findings of the paper provided evidence that behavioural biases play a noticeable role in individual investment decision-making processes regardless of the degree of development of the stock market. The paper demonstrated that heuristic and market factors play a dominant role in the process of individual decision-making in the Khartoum Stock

				Exchange. The factors that had a significant impact on individual investment decision-making process include Representativeness, Overconfidence, Anchoring, Historical cost of stock, Customer preferences, Loss aversion, Mental accounting, Other investors' trading volume, and Quick reaction to changes in other investor's decisions. Factors that had an insignificant impact include Availability bias, Change in stock prices, Regret aversion, and Other investors' decisions and choices
Hamid and Arfeen (2020)	The impact of behavioural biases and demographic factors on the financial risk tolerance of individual investors with the moderating role of personality traits at the Pakistan Stock Exchange	To investigate which behavioural finance biases and demographic factors are associated with a certain level of financial risk tolerance with the moderating effect of investor personality traits.	Structured Equation Modelling	The Results of the study point out that for individual investors in the Pakistan Stock Market, a total of forty-five moderating combinations were established with interactions of nine behavioural finance biases. Out of forty-five moderating combinations of personality traits with independent variables of behavioural finance biases, forty-two moderating effects significantly change the impact of behaviour finance biases on the dependent variable of financial risk tolerance. On the other hand, out of nine behavioural finance biases seven behavioural finance biases have a significant direct effect on the dependent variable of

				financial risk tolerance. It also is realized that the role of all controlling demographic variables to affect the dependent variable of financial risk tolerance is insignificant.
Nosita et al. (2020)	Impact of demographic factors on risk tolerance	To analyze the role of demographic factors in the willingness to take risks	Regression Analysis	The result showed that to conduct an education program and increase society's knowledge, the Government of the Republic of Indonesia, especially to Indonesia Stock Exchange and Securities Firms should pay attention to demographic factors and fit the investment product with the investor's profile
Mallik et al. (2017)	Impact of overconfidence and loss aversion biases on investor decision-making behaviour: mediating role of risk perception	To investigate the influence of behavioural biases, overconfidence and loss aversion on the decision-making behaviour of individual equity investors by considering risk perception as a mediator	Descriptive Statistics, Regression Analysis	The result indicated that investors were affected by overconfidence and loss aversion bias. Both biases had a significant impact.
Trang and Tho (2017)	Perceived risk, investment performance and intentions in emerging stock markets	To explore the effects of perceived risk on investment performance and intentions of individual investors	Cronbach's Alpha,	Results showed that perceived risk had a direct positive impact on both investment performance and intentions. Perceived risk also had an indirect influence on intentions to invest through investment performance. The higher investors perceive the risks of these stock types, the greater they are satisfied with their investment decisions, the recent rate of

				return achieved, and the more they intend to invest in the next time. Securities corporations regularly organized seminars, workshops or training courses about investing in the kinds of stocks, updated regulations of stock investment in time, and improved the quality of listed companies to attract more investors to the stock market.
Yuliani et al. (2017)	Risk perception and psychological behaviour of investors in an emerging market: Indonesian Stock Exchange	To investigate the investor's psychology on buying and selling common stock in the stock exchange in emerging markets	Descriptive Statistics, Correlation Analysis	Research findings show that perception of risk and psychology significantly affect confidence. Furthermore, confidence has a significantly positive impact on performance. This research has not been explained entirely towards the investor's psychological behaviour aspects, so the additional variable may be needed as the full reflection of the investor's psychology.
Subramaniam and Athiyaman (2016)	The effect of demographic factors on investor's risk tolerance	To identify the relationship between demographic factors and investor's risk tolerance	Chi-Square, Correlation Analysis	The result revealed that demographic factors such as age, education, investment experience and income of the investors were correlated with their risk tolerance and; gender, occupation and civil status are not related to risk tolerance.
Chattopadhyay and Dasgupta (2015)	Demographic and socioeconomic impact on risk attitudes of the Indian investors – an empirical study	To investigate the critical role that age, gender, marital/social status, number of dependents, educational qualifications,	Binary Logit Model	The study found that investors generally exhibited low risk tolerance, making them highly risk-averse. Consistent with the hypotheses, older investors were more risk averse

		employment and income status, savings pattern, future monetary planning, investments amount and returns from investments play in influencing risk tolerance and thereby finding whether the individual investors are risk-averse or risk-prone.		compared to younger, less experienced ones; married investors with children and dependents were more risk averse than their unmarried counterparts with fewer dependents; and higher education fostered risk tolerance, making investors more risk-prone. Additionally, higher income and savings were associated with reduced risk aversion, while future planning increased it. The study also revealed that larger investment amounts and higher returns increased risk tolerance, lowering risk aversion. However, contrary to expectations, women were found to be more risk-prone than men, and employment status had no significant effect on investors' risk attitudes.
Gumus and Dayioglu (2015)	An analysis of the socio-economic and demographic factors that have an effect on the risk-taking preferences of personal investors	To examine the demographic, social and economic factors mentioned above that may affect predispositions of individual investors operating in Borsa Istanbul (BIST) towards risk-taking	Frequency, Percentage, ANOVA,	In the analyses done within this scope, it has been demonstrated that the factors discussed above except marital status all had a significant effect on the risk perception of individual investors during their portfolio investments.
Raiz and Hunjra (2015)	Relationship between psychological factors and investment decision making: the	To examine the role of various psychological factors which affect investment decisions of Pakistani investors	Structural Equation Modelling	The findings and overall discussion concluded that the investor’s behaviour depends on how the available information was being presented to them and how much they were

	mediating role of risk perception			prone to taking risks while making decisions; thus, playing a significant role in determining the investment style of an investor.
Sayim and Rahman (2015)	The relationship between individual investor sentiment, stock return and volatility: evidence from the Turkish Market	To examine the impact of Turkish individual investor sentiment on the Istanbul Stock Exchange (ISE)	Vector Autoregression (VAR)	The result showed that unexpected changes in rational and irrational investor sentiment have a significant positive impact on ISE returns. This suggests that a positive investor sentiment tends to increase ISE returns. The study also documents that an unanticipated increase in the rational component of Turkish investor sentiment has a negative significant effect on ISE volatility.

2.4 Research Gap

The current body of research on behavioural biases and their impact on investment decision-making has primarily focused on international contexts, particularly in countries like Turkey and Pakistan. Studies such as those by Jain et al. (2015) and Tekçe et al. (2016) have shed light on the influence of biases such as overconfidence, disposition effect, and herding on investor behaviour. However, these studies tend to concentrate on individual biases and specific markets, with limited attention paid to more diverse psychological and demographic factors. This narrow focus creates a gap in understanding how a broader spectrum of behavioural biases influences risk perception, especially in developing markets like Nepal, where investor characteristics may differ.

Furthermore, while research like Sinem et al. (2016) and Hayat & Anwar (2016) has explored the role of financial literacy and its moderating effect on behavioural biases, little attention has been given to the interaction between financial literacy, investor personality, and risk tolerance. Nepal, as an emerging market, presents unique cultural and economic contexts that likely shape investor behaviour in distinct ways. However, existing studies have not explored how these local factors interact with behavioural biases to affect risk perception, leaving a substantial gap in the literature.

In Nepal, there is a lack of comprehensive research that integrates psychological biases like investor sentiment, overconfidence, mental accounting, anchoring, herding behaviour, loss aversion bias, and risk perception. The relationship between these factors and risk perception remains underexplored. Addressing this research gap will contribute to the literature by offering insights into how Nepali investors' risk perception is shaped by behavioural biases, providing a more holistic understanding of investment behaviour in the region.

CHAPTER III

RESEARCH METHODOLOGY

Research technique is the systematic and organized procedure that researchers employ to gather, assess, and analyze data in order to respond to a specific study topic or objective. To ensure the validity, reliability, and generalizability of the findings, it comprises selecting the most effective research design, data collection techniques, and data analysis methodologies. A well-thought-out, compelling, and justified methodology should direct the whole research process to guarantee that the results are trustworthy and contribute to the corpus of knowledge previously established in the pertinent field of study.

3.1 Research Design

Research design is the broad strategy or method a researcher use to effectively address the study topic or question. It outlines the exact steps that need to be followed, the data that needs to be collected, and the methods that need to be used for data analysis. A well-planned research study ensures that the objectives are completed, the data is collected in a systematic and comprehensive manner, and the findings are reliable and valid. There are various types of study designs. The choice of research design is influenced by a number of factors, including the nature of the study topic, available resources, ethical considerations, and the extent of the researcher's control over variables. To generate meaningful results and increase our comprehension of the subject being studied, a carefully considered research strategy is necessary.

The purpose of this study is to investigate and assess the relationship between behavioural biases and how they impact individual investors' perceptions of risk and to offer suggestions based on the results. This goal has been achieved through a combination of descriptive research design and causal-comparative research design. The purpose of the descriptive technique is to highlight and explain the data acquired for this study. The causal-comparative research design involves manipulating one or more independent factors and then observing the effects on dependent variables, such as risk perception, to ascertain cause-and-effect connections between variables. Experiments or quasi-experiments are typically used in this type of study to demonstrate causality.

3.2 Population, Sample and Sampling Design

All of the observations or units that are included in the study's scope are referred to as populations. A sample is a subset of the population that is representative of all the characteristics present in the population. The population of this study includes all kinds of investors. Some investors are selected for the research from among them. Using the random sampling approach, the sample was selected from among all investor kinds. Random sampling techniques are methods for choosing a subset of individuals at random from a larger population. This approach reduces bias and enhances the representativeness of the sample by ensuring that each member of the population has an equal chance of being chosen.

3.3 Nature of Data

This research aims to give a general overview of how behavioural biases affect risk perception. This study's data comes from original sources. The data came from the questionnaire. The primary sources from which the data was collected were the questionnaire, a number of earlier studies, pertinent bulletins, publications, and government organizations.

3.4 Method of Analysis

Data analysis is crucial to research because it enables researchers to achieve their objectives. Nowadays, statistical and financial tools are thought to be the most reliable and effective ways to analyze data. By utilizing these tools, researchers can ensure their analysis is reliable, easy, accurate, and efficient. The statistical and financial tools selected for the study are particularly appropriate for the topic, ensuring their relevance and appropriateness for the task at hand.

Statistical Tools

a) Arithmetic Mean

The mean or average value is one number from the data range that is used to represent each value in the series. Because it lies within the range of the data, an average value is also known as a measure of centre value. Divide the total number of words by the total number of items to determine the average value.

This formula is given below: -

$$\overline{X} = \frac{\sum X}{n}$$

Where,

$\sum$ X= $X_1+X_2+X_3+$……..+X_n=Sum of given set of observation

n = Number of items observed.

X= Variables

b) Standard Deviation

The standard deviation quantifies the spread or dispersion of data points around the mean. A higher standard deviation suggests that the sample is more varied. Conversely, a lower standard deviation indicates that the results are more consistent. For assessing the reliability and predictability of data, it is a crucial statistical technique. A popular tool for evaluating and analyzing data distributions in fields like economics, physics, and the social sciences is the standard deviation. Understanding standard deviation makes it easier to make informed judgments and draw important conclusions from data analysis.

In 1893, Karl Pearson proposed the standard deviation (SD) as a metric for dispersion. Sigma is typically used to indicate it (σ). The standard deviation determines the absolute dispersion, which is the measurement of the sauternes of the mass of figures in a series around an average. As dispersion grows, so does the standard deviation, and vice versa. Both series homogeneity and strong observational uniformity are indicated by a low standard deviation. A series with a large standard deviation is not very uniform or homogenous.

Symbolically,

$$SD\,(\sigma) = \sqrt{\frac{\sum \left(X - \overline{X}\right)^2}{N}}$$

c) Correlation Coefficient

The "connection" or "of association" between one or more independent variables or factors and one or more dependent variables or factors is known as correlation (s). The relationship between (or among) two or more variables, that is, just one dependent variable and one or more independent variables, is known as correlation.

$$\text{Correlation of Coefficient (r)} = \frac{n.\sum XY - \left(\sum X\right)\left(\sum Y\right)}{\sqrt{n.\sum X^2 - \left(\sum X\right)^2}.\sqrt{n.\sum Y^2 - \left(\sum Y\right)^2}}$$

Where,

n Number of pairs of observation.

X= Variable

Y = Variable

r = correlation of coefficient

d) Regression Coefficient

Regression analysis is a statistical method used to model the relationship between a dependent variable and one or more independent variables. The primary objective is to identify the line or curve that best fits the data and predicts the values of the dependent variable based on the values of the independent variables. By helping to understand correlation and quantify the strength and direction of the link between variables, regression makes inference and prediction easier.

Regression analysis is a statistical method used to assess how strongly one or more independent variables correlate with a dependent variable. This analysis includes looking at the kind and strength of the relationship between the variables. The regression procedure considers two types of factors: the dependent variable, which we attempt to forecast or explain, and the independent variables, which are used to make forecasts or explanations. Regression analysis allows us to estimate unknown values or forecast one variable based on the values of other variables that we know. It is a helpful tool for determining the strength of the relationship between two variables in simple regression or more than two variables in multiple regression.

The equation of a linear regression line is given as

$$Y = a + bx,$$

Where,

Y: This is the dependent variable

X: This is the independent variable

b: This is the coefficient or slope of the regression equation.

a: This is the intercept term or the constant term in the regression equation.

Multiple Linear Regression Analysis

Multiple regression analysis is a statistical technique used to investigate the connection between two or more independent variables and a dependent variable. This is a step up from simple linear regression, which examines the relationship between a single independent variable and a single dependent variable. The goal of multiple regression is to determine the overall impact of the independent variables on the dependent variable while taking into consideration their mutual influence.

The equation for a multiple regression model with 'p' independent variables is generally represented as:

$Y = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \varepsilon$

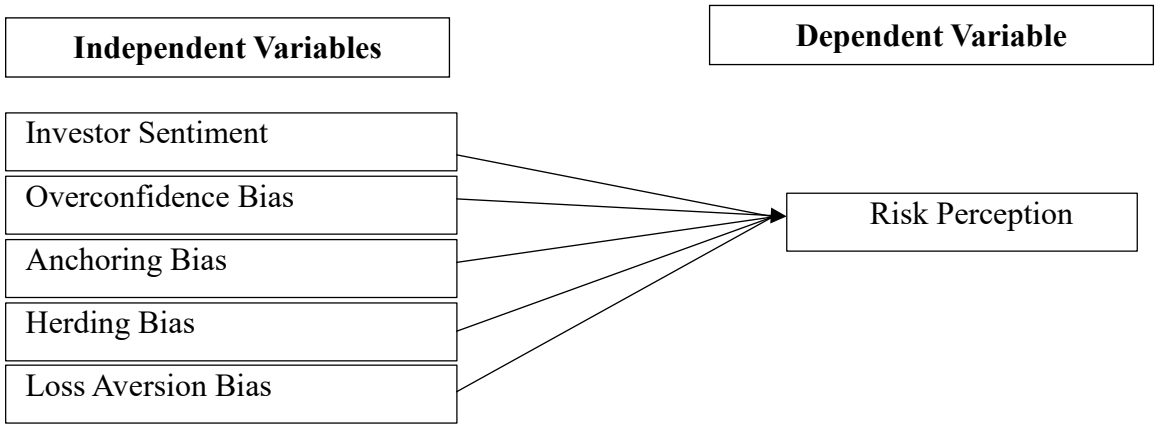
Where:

Y = Dependent variable.
X1, X2, ..., X4 = Independent variables.
β0 = Intercept.
β1, β2, ..., β5 = coefficients that represent the effect of each independent variable.
ε = Error term.

3.5 Research Framework and Variable Definitions

A conceptual framework is a paradigm that a researcher uses to organize and understand a research problem according to their ideas and knowledge about the subject. It serves as the pillar around which the entire research endeavour is built. The theoretical framework has a significant impact on the formulation of the study's theoretical underpinnings, the formulation of hypotheses, and the direction of the investigation. Establishing hypotheses and examining difficulties are the main objectives of the research, therefore a well-crafted theoretical framework is necessary to effectively respond to research inquiries. The correlations between the variables or qualities that have been selected to be included in the study are graphically represented by this framework.

Figure 1 *Independent and dependent variables*



(Sources: Nareswari et al., 2021; Saivasan and Lokhande, 2021)

The above charts display the variables that are used for this research. The purpose of this study is to investigate the impact of behavioural biases on the risk perception of individual perception. The conceptual framework illustrates the relationship between the independent and dependent variables of behavioural biases and risk perception of individual investors.

Independent Variables

Investor sentiment

The subjective opinions that investors have about an objectively evaluated or priced stock are known as investor sentiment. There is a claim that stock prices and returns may be impacted by investor emotion (Shefrin, 2008). Because it is thought to have the ability to explain asset prices and volatility that have confounded conventional models, investor sentiment is a phenomena that is becoming more and more significant. Investor sentiment, according to Baker and Wurgler (2007), is the expectation of future cash flow that is not backed up by data. To put it another way, investors forecast objectively priced assets, which causes them to deviate from their intrinsic value. Zhang (2008) asserts that emotions are investors' irrational expectations and ideas about assets that take the role of basic evidence. The market's bewildering, abrupt price swings can be explained by this behavior. As a result, when investors disregard objective information, they run the danger of receiving less than ideal returns on their investments. According to Hu and Wang (2013), sentiment is the biased perception of objective data, which means that investor predictions for future asset values may be based more on intuition and sentiment than on reason. Because it is thought to influence investing decisions and returns, investor sentiment is significant (Saiti et al., 2023).

Overconfidence bias

When investors are overconfident in the quality of the information they have, they frequently overestimate the accuracy of their analysis of the performance of certain companies, which leads them to maintain a small number of stocks in their portfolio (Mouna & Jarboui, 2015). Thus, it can be concluded that the degree of investor overconfidence is strongly correlated with the degree of diversity in the investment portfolio. The degree of portfolio diversity is determined by the investors' confidence in their ability to anticipate stock performance. Investors get overconfident in their research and overinvest in some securities as a result of feeling in control of the performance of the investment choices when they assess their future performance. Because they believe they can generate higher returns by actively trading in certain assets, overconfident investors frequently do not diversify their portfolios and instead depend mostly on the knowledge they have and the research they undertake. The researchers have been particularly interested in examining how investors' overconfidence affects several factors (Duxbury, 2015). Individual investors do evaluate the investments, and occasionally their opinions are overconfident (Mouna & Jarboui, 2015).

When people overestimate the accuracy of their personal information and think they have an advantage over other market players, overconfidence bias occurs. Individuals overestimate their own skills. Overconfidence can show up in several ways. One example is a tendency to spend excessively in what one knows, which results in insufficient diversity. Because their real estate (the home they own) is linked to the company's success, individuals invest in local businesses, even though this is detrimental from a diversification perspective. The phrase "overconfidence bias" describes a scenario in which investors place an excessive amount of trust in their forecasts for particular investing possibilities (Budiarto, 2017). Overconfident investors are more assured of their capacity to make wise financial choices (Bonney et al., 2020). These people typically overestimate their degree of understanding and underestimate the investment's danger (Raut et al., 2020). Confidence is usually a favourable trait displayed by investors, giving them bravery while making financial decisions, claim Ahmad and Shah (2020). Overconfidence, however, frequently leads investors to ignore risk and uncertainty, which runs counter to this constructive behavior. Such overconfidence is usually stoked by prior gains, which promotes increased trading but raises the risk of failure.

Anchoring

When investors use unsuitable and irrelevant information to forecast the future value of financial instruments, this is known as the anchoring effect. According to Kallinterakis et al., such unrelated information may contain emotional and superfluous elements like conjecture or incorrect assumptions (2010). Investors frequently ignore important facts and hang onto investments that have lost value as a result of this cognitive bias (Kempf & Ruenzi, 2006). The anchoring bias can lead many investors to make poor financial decisions, such as buying cheap investments or selling expensive ones (Waweru et al., 2008). According to a number of research, the anchoring heuristic can improve investment success (Ishfaq & Anjum, 2015; Sherani & Naveed, 2022; Gavrilakis & Floros, 2022). Specifically, these studies have found that anchoring can lead to significant enhancements in investment performance.

Herding Bias

Investors that follow the herd exhibit herding behavior, which is heavily impacted by risk perception and can result in irrational decision-making (Balcilar et al., 2013). This tendency, which makes reasonable people rely on the opinions of others, frequently results from a low-risk inclination and the desire to minimize any financial losses (Dickason et al., 2018). According to research, herding behavior increases when market volatility and uncertainty are high, which increases investment risks since market sentiment rather than unbiased evaluations influence decisions (Balcilar et al., 2014). Research has indicated that risk perception mediates the association between investment decisions and behavioral factors like herding and overconfidence (Mundi et al., 2022; Lim et al., 2018). However, some findings, like those of S. U. Ahmed et al. (2022), imply that risk perception does not always mediate this association. Furthermore, there is a negative correlation between risk perception and behavioral biases, meaning that the more risk investors perceive their danger, the less likely they are to display behavioral biases (Areiqat et al., 2019; Gonzalez-Igual et al., 2021; Hossain & Siddiqua, 2022; Zhang et al., 2022).

Loss aversion

Daniel Kahneman and Amos Tversky developed loss aversion bias in 1979 as a component of the original prospect theory, particularly in reaction to the prospect theory's discovery that people are more motivated to prevent losses than to reap rewards. The tendency for a person to minimize losses while pursuing benefits is known as loss aversion, according to

Kahneman, Knetsch, and Thaler (1991). According to earlier research, the psychological impact of losses is double that of gains. When making judgments about their investments, investors frequently want to prevent losing money. Investors care more about preventing losses than making money, according to Gupta and Shrivastava (2022).

Dependent Variable

Risk Perception

Investment behavior is greatly influenced by an individual's sense of risk, which varies greatly depending on psychological traits and situations. It functions as a social and cultural construct shaped by ideology, history, and values, transcending individual opinions (Riaz & Hunjra, 2015). With several researchers highlighting its mediating role in risk-related behaviors, an understanding of risk perception is crucial for preparing investors to approach risk in accordance with their psychological frameworks (Rana et al., 2011). It also has a significant impact on their investment decisions (Chen & Tsai, 2010).

With various measurement techniques concentrating on product, performance, and financial risks in consumer goods (Dai et al., 2014; Forsythe & Shi, 2003) and social or information risks in online banking, recent studies underscore the significance of perceived risk in a variety of domains, including finance (Kassim & Ramayah, 2015). Perceived risk in the financial environment is frequently evaluated using attitudes toward taking and avoiding risks (Barberis & Huang, 2001; Mayfield et al., 2008). However, little study has been done on the precise perceived dangers of stock trading, especially in developing nations like Vietnam. This disparity raises important issues about how perceived risk is measured and how it affects investment performance and intentions both directly and indirectly (Trang & Tho, 2017).

CHAPTER IV
RESULT AND DISCUSSION

This chapter presents the data in an appropriate format, which is then analyzed and discussed. After presenting the facts in a suitable manner, this chapter analyzes and discusses it. The analysis aimed to test the hypotheses presented in the introduction chapter or provide answers to the research questions. The results are the products of the analyses. To draw a conclusion, the findings are next examined and evaluated in the context of theories and empirical research. Consequently, this chapter is arranged as follows:

4.1 Result

4.1.1 Descriptive statistics

Descriptive statistics describe and delineate the main features of a dataset, characterize its variability, and highlight its key trends. The mean, median, and mode illustrate the center of the data, while the range, variance, and standard deviation reflect the dispersion of the data. Prior to conducting more study, these statistics are crucial for understanding the basic characteristics of data and are frequently employed in a range of sectors to provide concise, understandable summaries of data.

Table 2

Descriptive Statistics

	N	Mean	Std. Deviation
Investment Sentiment	155	20.1742	4.33522
Overconfidence Bias	155	17.8839	6.02587
Anchoring Bias	155	19.4000	5.27257
Herding Bias	155	20.2129	3.87631
Loss Aversion Bias	155	20.7742	4.19732
Risk Perception	155	21.3419	3.63325
Valid N (listwise)	155		

(Source: Appendix II)

Table 2, shows the descriptive statistics of all independent and dependent variables. To analyze these descriptive statistics, let's break down each factor's mean and standard deviation, and what this may imply about the sample.

The investment sentiment's average value is 20.17, indicating the average estimation among the observations. The standard deviation of investment sentiment is 4.34, the standard deviation is also relatively low, indicating that participants generally have a consistent level of sentiment toward investing.

The mean and standard deviation of overconfidence bias are 17.8839 and 6.0259 respectively, it shows a moderate mean value but a relatively high standard deviation. This suggests a wider range of responses, indicating that some investors in the sample may have high overconfidence while others show low levels, reflecting significant variability in overconfidence among individuals. The mean and standard deviation of anchoring bias are 19.4000 and 5.2726 respectively. The anchoring bias has a similar mean to overconfidence but with a slightly lower standard deviation. This shows that investors have relatively consistent anchoring tendencies, though variability still exists.

The mean and standard deviation of herding bias are 20.2129 and 3.8763 respectively. Herding bias has a comparable mean to investment sentiment and is one of the more consistent biases with a low standard deviation. This low variability suggests that most respondents have a similar inclination to follow group trends in investing. The mean and standard deviation of loss aversion bias are 20.7742 and 4.1973 respectively. Loss aversion has one of the highest mean scores among the biases, indicating that avoiding losses is a significant factor for most investors. The moderate standard deviation suggests that while loss aversion is widely present, some investors experience it more strongly than others.

The mean and standard deviation of risk perception are 21.3419 and 3.6333 respectively. Risk perception has a mean close to that of loss aversion, and the lowest standard deviation among all factors. This low variability suggests that respondents have a similar perception of risk, which could be due to a shared risk tolerance level within the sample.

In conclusion, Investors in this sample generally show high-risk perception, loss aversion, and herding bias, indicating a cautious approach with tendencies to follow group trends and avoid losses. Overconfidence shows the greatest variability, suggesting it is more individual-specific. Overall, the data highlights the significant role of behavioural biases—especially herding, loss aversion, and risk perception—in influencing investment decisions, aligning with findings in behavioural finance on the impact of psychological factors.

4.1.2 Correlation analysis

Pearson Correlation analysis is used to determine the relation between various independent

and dependent variables associated with the research. The linear correlation between any two variables is measured. When two variables rise in response to each other's increase, there is a positive correlation, indicating that the link is positive in direction. The opposite of the aforementioned is revealed by a negative correlation, which shows that one increases as the other falls. Five variables are studied in connection to one another using a statistical technique called correlation analysis. The behavioural biases and their effect on the risk perception of individual investors are determined by the correlation analysis, which also tells whether the link is significant or not.

Table 3

Correlation Analysis

		IS	OB	AB	HB	LAB	RP
Investment Sentiment	Pearson Correlation	1					
Overconfidence Bias	Pearson Correlation	.393**	1				
Anchoring Bias	Pearson Correlation	.374**	.706**	1			
Herding Bias	Pearson Correlation	.372**	.411**	.428**	1		
Loss Aversion Bias	Pearson Correlation	.289**	.457**	.479**	.607**	1	
Risk Perception	Pearson Correlation	.507**	.290**	.197*	.545**	.375**	1
	N	155	155	155	155	155	155

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

(Source: Appendix II)

Table 3, shows the Pearson correlation coefficient of psychological factors that affect the individual investor's decisions. The correlation data shows that several independent variables—particularly Investment Sentiment (IS), Herding Bias (HB), and Loss Aversion Bias (LAB)—have notable relationships with the dependent variable, Risk Perception (RP). The correlation analysis reveals significant relationships among investment sentiment, behavioural biases, and risk perception, which is the dependent variable.

Investment Sentiment, with a correlation of 0.507**, has the strongest positive association with Risk Perception, indicating that higher investment sentiment is likely to correspond to heightened risk perception among investors. This suggests that individuals with stronger or more pronounced investment sentiment may be more sensitive to potential risks in the market.

Herding Bias (0.545**) and Loss Aversion Bias (0.375**) also demonstrate significant positive correlations with Risk Perception. The substantial correlation between Herding Bias and Risk Perception suggests that investors who tend to follow group trends perceive risks more acutely, possibly due to the influence of collective behaviour in shaping their own risk evaluations. Meanwhile, Loss Aversion Bias's moderate correlation with Risk Perception implies that investors with a strong aversion to losses are somewhat more likely to perceive greater risk, underscoring a cautious approach to investments.

Overconfidence Bias (OB) and Anchoring Bias (AB) show weaker correlations with Risk Perception, with OB at 0.290** and AB at 0.197*. Although significant, these correlations indicate that overconfidence and anchoring have less influence on risk perception compared to other biases. The positive correlation with Overconfidence Bias suggests that overconfident investors may perceive some risk but not as strongly as those influenced by herding or loss aversion, while the slight correlation with Anchoring Bias implies that investors' tendency to fixate on initial information only minimally affects their risk perception.

Overall, the data highlights that social influences, such as herding behaviour, and personal aversions, like loss aversion, are central in shaping how investors perceive risk. This aligns with behavioural finance findings that suggest risk perception is influenced by both group behaviour and individual risk aversion, making herding and loss aversion particularly relevant biases to consider in understanding investment decisions.

4.1.3 Regression Analysis

Regression analysis is a collection of statistical methods used to determine the relationship between one or more independent variables and a dependent variable. It may be used to assess the strength of the existing relationship between variables and model their future relationship. In this study, risk perception is the dependent variable, whereas investment sentiment, overconfidence bias, anchoring bias, herding bias and loss aversion bias are all considered independent variables.

1. Model summary

Table 4

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.656[a]	0.430	0.411	2.78944

a. Predictors: (Constant), Loss Aversion Bias, Investment Sentiment, Overconfidence Bias, Herding Bias, Anchoring Bias

(Source: Appendix III)

Table 4, indicates the model summary of regression analysis. R is the correlation coefficient which shows how strong the linear relationship is between the dependent and independent variables. The value of multiple R is 0.656. The value of the R square is 0.430, which indicates that 43.0% of the systematic variation in risk perception can be explained by independent variables such as investment sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion bias. The remaining percentage is due to the effect of other factors. The standard error is 2.78944, which reflects the deviation between the actual value and the estimated value of dependent variables.

2. ANOVA Analysis

ANOVA (Analysis of Variance) in regression provides insights into the overall significance of the model and individual variables contributions. The following table shows the ANOVA analysis.

Table 5

ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	873.511	5	174.702	22.452	.000[b]
	Residual	1159.367	149	7.781		
	Total	2032.877	154			

a. Dependent Variable: Risk Perception

b. Predictors: (Constant), Loss Aversion Bias, Investment Sentiment, Overconfidence Bias, Herding Bias, Anchoring Bias

(Source: Appendix IV)

Table 5, represents the ANOVA analysis which shows a significance F of 0.000, the significance F value is lower than the level of significance i.e. 0.05 it is concluded that there is a significant relationship between the dependent variable i.e. risk perception lag and independent variables. The value of F is 22.452, which is a measure used in the analysis of variance (ANOVA) and regression analysis to assess the significance of the difference between group means or the significance of the overall regression model.

3. Multiple linear regression coefficient

To ascertain the relationship between one dependent variable and two or more independent variables, a statistical technique called multiple linear regression analysis is employed. The capabilities of simple linear regression are expanded by the addition of several predictors, which allow the model to account for more data complexity.

The multiple linear regression model can be represented as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \epsilon \ldots\ldots\ldots\ldots\ldots\ldots \text{(i)}$$

$$Y\ (RP) = 7.695 + 0.316IS + 0.058OB - 0.157AB + 0.388HB + 0.069LAB \ldots\ldots \text{(i)}$$

Where,

Y (RP)	= Risk Perception as a dependent variable
IS	= Investment Sentiment as an independent variable
OB	= Overconfidence Bias as an independent variable
AB	= Anchoring Bias as an independent variable
HB	= Herding Bias as an independent variable
LAB	= Loss Aversion Bias as an independent variable
β_0	= Intercept
$\beta_1 \ldots\ldots \beta_6$	= coefficient of independent variables
ϵ	= Error term

Table 6

Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.695	1.448		5.313	0.000
	Investment Sentiment	0.316	0.059	0.377	5.394	0.000
	Overconfidence Bias	0.058	0.055	0.096	1.063	0.290
	Anchoring Bias	-0.157	0.063	-0.228	-2.500	0.014
	Herding Bias	0.388	0.076	0.414	5.086	0.000
	Loss Aversion Bias	0.069	0.071	0.080	0.972	0.333

a. Dependent Variable: Risk Perception

(Source: Appendix V)

Table 6, shows the multiple linear regression coefficient. In this regression analysis, the researcher examines how each independent variable (such as investment sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion bias) affects Risk Perception (dependent variable) using unstandardized coefficients (B) and significance values (Sig).

When all independent variables are set to zero, the estimated value of the risk perception is represented by the intercept term, which is equal to 5.048. However, the independent variable coefficients are important.

Investment sentiment, with a coefficient of 0.316 and a significance level of 0.000, Investment Sentiment has a strong and highly significant positive impact on Risk Perception. This implies that as investment sentiment rises, so does Risk Perception, by 0.316 units per one-unit increase in sentiment, suggesting it is a major influencer of risk awareness. The regression coefficient for Overconfidence Bias is 0.058, with a significance level of 0.290, indicating that its effect on Risk Perception is positive but not statistically significant. Thus, overconfidence does not meaningfully contribute to risk perception in this model.

Anchoring Bias has a negative coefficient of -0.157 and a significance level of 0.014, meaning it has a statistically significant but inverse effect on Risk Perception. This indicates that higher levels of anchoring bias decrease Risk Perception by 0.157 units, suggesting that individuals who anchor on initial information may perceive less risk.

Herding bias, with a coefficient of 0.388 and a significance level of 0.000, Herding Bias shows a strong and highly significant positive relationship with Risk Perception. This suggests that a one-unit increase in herding bias raises Risk Perception by 0.368 units, making it one of the strongest predictors. The regression coefficient for Loss Aversion Bias is 0.069, with a significance level of 0.333, indicating an insignificant effect on Risk Perception. This shows that loss aversion does not have a meaningful impact on risk perception in this context.

In conclusion, investment Sentiment and Herding Bias significantly increase Risk Perception, while Anchoring Bias significantly reduces it. Overconfidence and Loss Aversion do not significantly influence Risk Perception in this model. This highlights the prominent role of social influences (herding) and sentiment in shaping investors' risk awareness, while anchoring can lead to a reduced sense of perceived risk.

4.2 Discussion

Individual investors' perceptions of risk were positively and statistically significantly impacted by investing sentiment. The results of the study are consistent with those of Nareswari et al. (2021), who discovered that while investor emotion and overconfidence might positively impact risk perception, overreaction, herding, and the disposition effect can negatively impact it. Salience and overreaction have little effect on how danger is perceived. Investor sentiment has a favorable effect on how risk is perceived. Investor emotion may have an impact on the level of investor confidence. They are certain that the company will have positive cash flow in the near future without carrying out a basic analysis. It suggests that an investor in a good mood will view the risk as an opportunity to boost their return.

The overconfidence bias had a positive and statistically insignificant impact on the risk perception of individual investors. The study's outcome supports the conclusions of Mallik et al. (2017) and Nareswari et al. (2021), which found that risk perception was positively and statistically insignificantly impacted by overconfidence bias. Overconfidence is a cognitive bias that leads investors to overestimate their ability to make investments and

often take unnecessary risks. Parveen et al. (2020) claim that since overconfident investors see risk favorably, they are more inclined to make risky investment decisions. The study highlights how behavioral biases like as mental accounting, anchoring, herd bias, and overconfidence bias may significantly affect investors' decision-making. Wattanasan et al. (2020) focus on biases such as herding, degree of risk-taking, availability bias, conservatism bias, and overconfidence bias as they examine how psychological and emotional factors affect investors' decisions in the securities market. They find that appreciation had a major effect on investors' mindset, which in turn led to a decline in taxation and revenue generation. A 2019 study by Areiqat et al. looks at how behavioral finance elements, including overconfidence, affect stock investing choices at the Amman Stock Exchange. This suggests that people deliberately go for investments with higher levels of risk because they have faith in their abilities, according to a study. In a study by Abdin et al., the impact of overconfidence on people's investment decisions was examined (2017). The study's findings demonstrated that overconfidence has a significant influence on investment choices. This suggests that overconfident individuals frequently base their investment choices on their exaggerated perception of their own abilities. The results showed that overconfidence is one of the most significant behavioral factors impacting investing decisions. Consequently, the relationship between overconfidence and taking risks while investing is mediated by perceived risk (Kirchler & Maciejovsky, 2002).

The anchoring bias had a negative and statistically significant impact on the risk perception of individual investors. The finding of this study is consistent with the findings of Saivasan and Lokhande (2022), that the anchoring bias influenced the risk perception of individual investors.

The herding bias had a positive and statistically significant impact on the risk perception of individual investors. The study's findings are in accordance with those of Ahmed et al. (2022), who discovered that herding behavior plays a major role in explaining investors' perceptions of market risk. Herding behavior is caused by the level of perceived risk related to stock returns (Shah et al., 2017). This herding behavior is a result of investors' risk aversion or desire to lower their risk of loss (Ullah & Elahi, 2014). Herding leads sensible people to behave unreasonably by imitating other people's viewpoints while making decisions (Kumar & Goyal, 2015). Everything happens in an uncertain atmosphere because there is less investment and a higher perception of risk (Monne et al., 2016).

Herding behaviour positively interacts with bearish market trends while negatively interacts with bullish trends (Shah et al., 2019). Herding behavior has a significant influence on investment decision-making (Almansour & Arabyat, 2017; Boda & Sunitha, 2018; Dominic & Gupta, 2020; Raheja & Dhiman, 2019). Herding awareness, demography, and perceived risk all affect how people invest (Sarkar & Sahu, 2018). According to Baddeley et al. (2010), investors' financial decisions are influenced by herding bias.

Herding has been described as a confluence of motions caused by collective imitation (Philippas et al., 2013). It evaluates the financial markets' asymmetric risk-return relationship (Bekiros et al., 2017). Herding behavior is probably impacted by the market's lack of knowledge (Ben Mabrouk, 2018). When market circumstances are unstable, people naturally emulate, discuss, and observe the activities of others (Yu et al., 2018). Herding conduct negatively impacts the performance of assets (Filiz et al., 2018). Balcilar et al. (2013) claimed that the effect of risk perception on stock returns causes herding behavior. Many investors exhibit overconfidence biases or follow the crowd while making financial judgments. This herding tendency stems from investors' low-risk propensity or risk avoidance, which is driven by their desire to lessen the chance of financial loss (Dickason et al., 2018). Ordinarily, reasonable people start acting strangely during herding because they are relying on the views of others. This behavior may be the consequence of a lack of knowledge about investing or a tendency to follow the opinions and tactics of others (Wattanasan et al., 2020).

A strong link between risk-return dynamics and herding behavior is shown by Balcilar et al. (2014). The researchers discovered that herding tendency tends to increase in situations when market volatility and uncertainty are high. This enhanced herding tendency raises the potential risks associated with investing since investors are more likely to base their decisions on market sentiment rather than an objective risk assessment. Herding behavior is prevalent in the US stock market and is investigated in relation to risk and uncertainty, according to Bekiros et al. (2017). Dickason et al. (2018) claim that the relationship between behavior traits and investing success is significantly mediated by risk perception. Similarly, Mundi et al. (2022) show that individual differences in risk perception might account for the relationship between overconfidence and investment decisions. Other study by Zhang et al. (2022) and Lim et al. suggests that risk perception mediates the relationship between behavioral finance traits and investing decision-making (2018). Ahmed et al.

(2022) claim that risk perception does not act as a mediator in the relationship between investment choices and herding behavior. Other studies have found a negative correlation between the behavioral biases of individual investors and their perception of risk (Areiqat et al., 2019; Gonzalez-Igual et al., 2021; Hossain & Siddiqua, 2022; Zhang et al., 2022). The consequence is that when risk perception rises, investors are less likely to experience behavioral biases.

The loss aversion bias had a positive and statistically insignificant impact on the risk perception of individual investors. Despite not supporting the findings of Mallik et al. (2017), who discovered that the loss aversion bias had a positive and statistically significant affect on risk perception, the study's results clearly support the mediation effect between loss aversion and investment decision. The findings of this study corroborate those of Saivasan and Lokhande (2022), who discovered that the loss aversion bias affects people's perceptions of risk when it comes to stock investment. Shafqat and Malik's (2021) study found that the loss aversion bias had a negative and statistically significant effect on the frequency of trading by individual investors. On the other side, risk perception has a slight but beneficial influence on how frequently individual investors trade.

CHAPTER V
SUMMARY AND CONCLUSION

The summary, conclusions, and practical suggestions have all been included in this chapter. This serves as both a concise synopsis of the analysis of the pertinent data and an introduction to each of the study's parts. Research wouldn't be complete without any suggestive results, therefore to guide future development and enhancement of bank policy, the study has also attempted to highlight risk perception as well as corrective recommendations for its removal.

5.1 Summary

The researcher investigates behavioural bias and their effect on the risk perception of individual investors. The main purpose of the study is to analyze the relationship between behavioural biases such as investor sentiment, overconfidence bias, anchoring bias, herding bias, loss aversion, and risk perception. To investigate the impact of behavioural factors such as investor sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion on the individual's risk perception. Finally, the last objective is to assess the extent to which behavioural biases mostly affect the investor's risk perception. While analyzing the psychological factors that affect the risk perception of individual investors, some brief articles, journals and thesis reviews were performed. To find the impact of behavioural biases on the risk perception of individual investors descriptive and causal-comparative research designs were adopted in this study. A sample of 155 respondents were chosen to collect the data. The respondents are individual investors. The collected data and information were analyzed by using SPSS 27.0 version software and various statistical tools such as descriptive statistics, correlation analysis, multiple linear regression analysis as well as tables were used to show the result clearly. Age, gender, employment type and expertise are the indicators of demographic factors. The independent variables are investment sentiment, overconfidence bias, anchoring bias, herding bias loss aversion bias and risk perception are the dependent variables of the study.

The analysis reveals that investment sentiment shows a lower mean (20.17) with low variability, suggesting a stable sentiment level among participants. Overconfidence bias has a moderate mean (17.88) but high variability, indicating diverse levels of overconfidence across individuals. Anchoring bias has a similar mean to overconfidence (19.4) but slightly lower variability, suggesting relatively consistent anchoring tendencies.

Herding bias (mean: 20.21) and loss aversion (mean: 20.77) are both prominent, with herding showing low variability, indicating a common tendency to follow group trends, while loss aversion has moderate variability, showing that most investors strongly avoid losses but with some differences. Finally, risk perception has a mean of 21.34 and the lowest variability, suggesting a shared and stable level of risk tolerance among participants.

The data indicates that investment sentiment, herding bias, and loss aversion bias all have significant positive correlations with risk perception, suggesting that these factors heighten investors' sensitivity to risk. Investment sentiment (0.507**) and herding bias (0.545**) show particularly strong associations, highlighting that individuals with pronounced sentiment or a tendency to follow group behaviour perceive risk more acutely. Loss aversion also moderately correlates with risk perception, reinforcing a cautious investment approach. Overconfidence (0.290**) and anchoring (0.197*) biases have weaker correlations, indicating a lesser influence on risk perception. Overall, social influences like herding and personal aversions such as loss aversion play central roles in shaping risk perception, consistent with behavioural finance insights into the impact of psychological factors on investment decisions.

The value of multiple R is 0.656. The value of the R square is 0.430, which indicates that 43.0% of the systematic variation in risk perception can be explained by independent variables such as investment sentiment, overconfidence bias, anchoring bias, herding bias, and loss aversion bias. The remaining percentage is due to the effect of other factors.

The regression analysis shows that when all independent variables are zero, the baseline Risk Perception is 7.695. Investment Sentiment (coefficient 0.316, p=0.000) has positive, significant effects on Risk Perception, with Investment Sentiment being a strong predictor. Herding Bias (coefficient 0.388, p=0.000) also significantly increases Risk Perception, underscoring the impact of social influences on risk awareness. Conversely, Anchoring Bias (coefficient -0.157, p=0.014) has a significant negative effect, suggesting that those who rely on initial information perceive lower risk. Overconfidence (p=0.290) and Loss Aversion (p=0.333) are not statistically significant, showing they do not meaningfully affect Risk Perception in this model. Overall, social influences (herding) and sentiment are key factors in shaping investors' risk perception, while anchoring bias reduces it.

5.2 Conclusion

In conclusion, investment sentiment stands out with a high positive correlation and a significant impact on risk perception, as indicated by its correlation coefficient and regression analysis results. This suggests that a strong sentiment toward the market may heighten an investor's sensitivity to perceived risks. Investors who display positive sentiment may also exhibit a heightened awareness of potential losses or market volatility, underscoring the role of emotional and psychological outlooks in financial decision-making. With low variability in responses, it appears that investment sentiment is fairly consistent across the sample, indicating a general alignment in market outlooks among participants.

Herding bias also has a notable positive relationship with risk perception, showing that investors who are inclined to follow group behavior tend to perceive risks more acutely. This aligns with theories in behavioral finance that propose social influences are a powerful determinant in shaping individual investment decisions. The consistency of herding bias responses suggests that many investors may be inclined to follow trends or rely on group actions, which could magnify perceptions of risk within a collective setting. Such tendencies emphasize the importance of understanding social biases, as they can amplify risk aversion or risk-seeking behaviors based on prevailing market sentiments.

Anchoring bias, in contrast, has a significant negative effect on risk perception. This inverse relationship implies that investors who are prone to relying on initial information or fixed reference points may have a reduced perception of risk. The anchoring effect reflects a certain rigidity in risk assessment, which may lead investors to overlook or undervalue new information that could alter risk evaluations. This finding highlights the potential limitations of anchoring in financial decision-making, as investors who anchor their judgments might be less responsive to changing market conditions or emerging risks.

Finally, the regression model itself reveals that 43.0% of the variability in risk perception is explained by the independent variables, with the remainder due to other unexamined factors. Investment sentiment and herding bias were the most significant predictors, affirming the role of psychological biases in influencing risk perception. Loss aversion and overconfidence did not significantly impact risk perception in this model, suggesting that while individual risk aversion and confidence levels are influential in general, they may not be as central to risk perception as demographic factors and collective behaviours. Overall,

these findings reinforce the notion that investor psychology, shaped by both individual and social factors, plays a critical role in shaping how risks are perceived and managed in the financial context.

5.3 Implications

Based on findings and analysis following recommendations are proposed for both individual and institutional investors to perform better;

1. Since investment sentiment strongly impacts risk perception, investors should be encouraged to evaluate their emotional state and market outlook before making decisions. Understanding how sentiment can cloud risk perception can help investors make more rational choices.
2. As herding bias significantly influences risk perception, investors should be made aware of the potential dangers of following the crowd without fully assessing individual investment risks. Encouraging independent research and critical thinking can help reduce the negative effects of herding.
3. Overconfidence, though not statistically significant in this study, is still a common trait among investors. Financial education programs should focus on teaching investors about the risks of overconfidence, helping them recognize when they may be underestimating potential risks.
4. Investors who rely heavily on initial information (anchoring bias) might underestimate risks. To counteract this, financial professionals should encourage continuous learning and adaptability, advising clients to regularly update their risk assessments based on new information.
5. Loss aversion was found to be an important factor in shaping risk perception, suggesting that investors are highly sensitive to potential losses. Advising investors to focus on long-term strategies and diversification can help mitigate the emotional response to short-term market fluctuations.
6. Given the significant role of psychological biases in shaping risk perception, investment platforms should integrate behavioural insights into their risk management tools. By providing features that help investors recognize and manage biases, such platforms can help investors make more informed and balanced decisions.

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APPENDICES

Appendix I

Descriptive Statistics

	N	Mean	Std. Deviation
Investment Sentiment	155	20.1742	4.3352
Overconfidence Bias	155	17.8839	6.0259
Anchoring Bias	155	19.4000	5.2726
Herding Bias	155	20.2129	3.8763
Loss Aversion Bias	155	20.7742	4.1973
Risk Perception	155	21.3419	3.6333
Valid N (listwise)	155		

Appendix II

Correlation Analysis

		IS	OB	AB	HB	LAB	RP
Investment Sentiment	Pearson Correlation	1					
Overconfidence Bias	Pearson Correlation	.393**	1				
Anchoring Bias	Pearson Correlation	.374**	.706**	1			
Herding Bias	Pearson Correlation	.372**	.411**	.428**	1		
Loss Aversion Bias	Pearson Correlation	.289**	.457**	.479**	.607**	1	
Risk Perception	Pearson Correlation	.507**	.290**	.197*	.545**	.375**	1
	N	155	155	155	155	155	155

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix III

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.656[a]	0.430	0.411	2.78944

a. Predictors: (Constant), Loss Aversion Bias, Investment Sentiment, Overconfidence Bias, Herding Bias, Anchoring Bias

Appendix IV

ANOVA Analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	873.511	5	174.702	22.452	.000[b]
	Residual	1159.367	149	7.781		
	Total	2032.877	154			

a. Dependent Variable: Risk Perception

b. Predictors: (Constant), Loss Aversion Bias, Investment Sentiment, Overconfidence Bias, Herding Bias, Anchoring Bias

Appendix V

Regression Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	7.695	1.448		5.313	0.000
	Investment Sentiment	0.316	0.059	0.377	5.394	0.000
	Overconfidence Bias	0.058	0.055	0.096	1.063	0.290
	Anchoring Bias	-0.157	0.063	-0.228	-2.500	0.014
	Herding Bias	0.388	0.076	0.414	5.086	0.000
	Loss Aversion Bias	0.069	0.071	0.080	0.972	0.333

a. Dependent Variable: Risk Perception

Behavioural Biases and Their Effect on Risk Perception

I am a student of Masters of Business Studies (MBS) at Shanker Dev Campus, Tribhuvan University, as a part of my study; I am conducting research on the "Behavioural Biases and their effect on risk perception". I will appreciate your time and patience in completing this questionnaire with your genuine response.

Usha Khanal

Researcher

Instructions:

This questionnaire aims to explore how various behavioural biases influence individuals' risk perception in investment decisions. Please respond to each statement using the following scale:

- 1 = Strongly Disagree
- 2 = Disagree
- 3 = Neutral
- 4 = Agree
- 5 = Strongly Agree

Behavioural Biases

Please mark the appropriate response to indicate your personal feelings on the following biases;

Investor Sentiment						
	Statement	**1**	**2**	**3**	**4**	**5**
IS1	I often make investment decisions based on my emotional state.					
IS2	When the market is optimistic, I am more willing to take investment risks.					
IS3	Negative market news makes me more risk-averse in my investment decisions.					
IS4	I feel more confident making investments when others are positive about the market.					
IS5	I tend to make riskier decisions when I feel excited about an investment.					
IS6	My investment decisions are influenced by general market sentiment.					
Overconfidence Bias						
	Statement	**1**	**2**	**3**	**4**	**5**
OB1	I believe that my investment decisions are better than most people's.					
OB2	I am confident that I can predict future market trends.					
OB3	I often rely on my instincts when making investment decisions.					
OB4	I tend to underestimate the risks involved in my investment choices.					
OB5	My past successes make me more confident in taking risks.					
OB6	I believe I am less likely to make financial mistakes than others.					
Anchoring Bias						
	Statement	**1**	**2**	**3**	**4**	**5**
AB1	I rely heavily on initial information when making investment decisions.					
AB2	My investment choices are often influenced by the first piece of data I receive.					
AB3	I tend to stick to a target price when deciding to buy or sell an investment.					

AB4	I find it difficult to adjust my decisions after receiving new information.					
AB5	My past experiences greatly influence my current investment decisions.					
AB6	I hold on to initial judgments about investments even when new information suggests otherwise.					
Herding Bias						
	Statement	**1**	**2**	**3**	**4**	**5**
HB1	I often follow what other investors are doing in the market.					
HB2	If many people are buying a particular stock, I am likely to buy it as well.					
HB3	I feel more confident in my decisions when they align with others' investment choices.					
HB4	I worry about missing out on investment opportunities that others are pursuing.					
HB5	I believe that the majority of investors can't be wrong about an investment.					
HB6	I sometimes question my investment decisions when they differ from the crowd.					
Loss Aversion Bias						
	Statement	**1**	**2**	**3**	**4**	**5**
LAB1	I am more concerned about avoiding losses than making gains.					
LAB2	I often hold on to losing investments longer to avoid realizing the loss.					
LAB3	The fear of losing money prevents me from taking financial risks					
LAB4	I tend to choose investments with lower returns but less risk of loss.					
LAB5	Losing money on an investment affects my future financial decisions.					
LAB6	I feel more emotional about losing money than gaining the same amount.					
Risk Perception						
	Statement	**1**	**2**	**3**	**4**	**5**
RP1	I perceive most investment opportunities as too risky.					
RP2	I often avoid investments that have the potential for high returns due to the associated risk.					
RP3	I am generally comfortable taking calculated financial risks.					
RP4	My perception of risk increases during times of market volatility.					
RP5	I believe that understanding the risks involved in investments is essential before making decisions.					
RP6	I often assess the risks of investments before considering the potential gains.					

Thank you for your participation! Your responses will contribute to a better understanding of how behavioural biases impact risk perception in investment decisions.

✶✶✶

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