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THE BEHAVIOR RISK BIASES AND SUSTAINABLE INVESTMENT DECISION

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ABSTRACT

This study explores how economic, environmental, social, and governance (EESG) factors have a role in investment decision-making as a part of sustainable business practices (SBP). The study investigates the interaction between SBP and investors' three key behavioral risk biases: risk perception, risk-taking propensity, and loss aversion. The study aims to uncover characteristics of private investors that prioritize sustainability above return and assess the degree to which they are prepared to forego returns in favor of a more sustainable investment fund by evaluating the personality traits of investors. The study employs a questionnaire to collect new data from individuals who have invested in the stock market in Pakistan. The study used the PLS-SEM analytical bootstrapping approach to assess the study hypotheses and smart PLS for data analysis. The findings reveal a significant link between investor behavior, risk aversion, and particular investment decisions, supported by data on validity, discriminant validity, convergent validity, reliability, assessment measurement model, and structural model. The study's findings will help businesses looking for funding and investors understand how SBP affects investment decisions. This study provides a deeper understanding of how sustainable practices affect investment decisions by illuminating the complex interactions between EESG factors, SBP, and investor behavior.

KEYWORDS: Behavior Risk Biases, Sustainable Business Practices, Investment Decision

1. INTRODUCTION

The field of behavioral finance seeks to clarify and deepen our understanding of how investor emotions and cognitive biases affect the decision-making process. It examines the effects of both private and public feelings. It is also important to concentrate on how investors use information and behave to make decisions. Investors usually employ several approaches for obtaining reliable data while making investing decisions. Investors used to make judgments based only on financial performance, but more and more have objectives beyond monetary gain. When making investment decisions, they also consider information other than financial data, such as economic, environmental, social, and governance (EESG) data (Sultana et al., 2018). In the same manner, an investment strategy known as a sustainable and responsible investment (SRI) "integrates EESG factors in the research, analysis, and selection process of securities within an investment portfolio to better capture long-term financial returns for investors and to benefit society by influencing investor behavior" (Park & Oh, 2022). Recently, increasing attention has been paid to stock market investors who base their selections on Economic, Environmental, Social, and Governance (EESG) problems. The Gartner (2022) sustainability opportunities, risks and technologies survey reported that 86% of executives view sustainability as an investment that shields their company against disruption. In this context, sustainable development concerns and their inclusion in the investment decision-making procedure are expected to become increasingly significant and often addressed in the following decades (Lagerkvist et al., 2020). Prior research has examined how ethical, religious, social, environmental, and governance factors affect investment decisions (Pellinen et al., 2015). Nonetheless, little is understood about how perceptions, attitudes, and conventions influence the investing choices of individual investors.

Despite this, it is essential to take into account investor behavior, which is determined by the cognitive aspects (mental processes) and emotional concerns (emotions) that financial actors exhibit through the processes of financial planning and investment management (Alrabadi et al., 2018). In a nutshell, the events of the past, personal beliefs, and individual inclinations all play a part in investors' decision-making processes (Baker & Ricciardi, 2014). Examining the primary factors behind economic downturns and the growing number of anomalies in the stock market are two appropriate places to start when establishing the case for more thorough research in this area (Margolis & Agrawal, 2023).

The essential presumption in contemporary finance theory is that the financial markets can evolve based on reasonable projections. Another way to say this is that rational investors are the ones who determine the values of assets. On the contrary,

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moral hazards, highly risky, short-term investments, and human goals frequently encourage people to act speculatively and rapidly. The term "speculative investing" is commonly used to refer to this kind of financial activity (Patrick, 2011). This research uses behavioral finance results to bring attention to the basic behavioral risk biases that could lead to a financial disaster in the setting of a developing economy's already unstable financial environment. Therefore, it may be argued that a weakness of the current literature is its inability to analyze or underestimate the behavioral factors and their interplay with sustainable business practices to drive investment decisions. To address this gap, our study investigation resides on the question that is how investors' three fundamental behavioral risk biases - risk perception, risk-taking propensity, and loss aversion - interact with sustainable business practices to guide investment decisions.

Besides, "risk versus reward" is a unique phrase considered crucial to the investment philosophy in finance. Nonetheless, a more current term may be sustainability versus reward. At the same level of risk, would you prefer the asset with a more significant return or the one with more sustainability? Several institutional investors have begun to realize more and more recently how important long-term sustainability is to their investments. Given their impact on a portfolio's risk and return profile, economic, environmental, social, and governance (EESG) aspects are crucial for investors to focus on (Park & Oh, 2022; Sultana et al., 2018).

While Choudhry (2018) pointed out, traditional economic theory argues that investors are motivated entirely by their inclinations for risk tolerance, liquidity, and expected investment returns. Each investor gives different importance to the various considerations. The relationship between risk, return, and liquidity is a magic triangle of investing because of how closely these three factors are intertwined. Traditional economic theory is not without constraints, however, when considered in the context of the growing number of stakeholders and, in particular, shareholders demanding more sustainable corporate practices. The drive to carry out business responsibly and ethically is an example of a certain pattern of behavior that has surfaced during the past 20 years. Comparably (Revelli, 2017) claim that Individual and institutional investors are becoming more interested in socially responsible investment (SRI), which includes strong governance, environmental preservation, ethical principles, and improved socioeconomic situations. While investigated from a theoretical point of view, these aspects transformed the classic magic triangle by making it a magic square (Lingnau et al., 2022). This is because an additional dimension of sustainability expands the traditional magic triangle. According to (Revelli, 2017), in this situation, individual investors refrain from basing their decisions solely upon financial considerations; rather, they look for investments congruent with their principles and beliefs. Even though researchers have traditionally paid close attention to how social and environmental responsibility affects business performance (Revelli & Viviani, 2015). Over the past decade, there has been an evolution toward investigating how individuals make investment decisions in sustainable business practices.

Evaluating the factors that influence shareholders' motivation to make investments is particularly significant because shareholders are one of the major stakeholders of a business (Harrison et al., 2019). While several research has looked at the appealing nature of socially responsible investments, none have considered the moderating impact that sustainable business practices might have on the risk behaviors of investors. Even though most of the research focused on the justifications for adoption or the characteristics of investors focusing on sustainability. To our knowledge, no research has been conducted that would allow us to evaluate the moderation mechanism while considering the sustainability viewpoint when making a decision. This research highlights the need to obtain an improved comprehension of risk behaviors. Eventually, our study has also provided practical implications for industry and theoretical contribution to the investment decision literature by observing the risk-averse behavior and simultaneously interrogating the field of behavioral finance through a sustainability lens for societal development. This study supports the present trend in the financial industry towards sustainability and contributes to sustainable investing.

1.1. THEORETICAL CONTRIBUTION

The idea that investors have commonly held, namely that all the information needed to make good investing decisions was available, is a clear evidence of the old-oriented approach to maximizing one's profits. As an illustration, Modern Portfolio Theory (Markowitz, 1991) demonstrates a variety of constraints linked to the concepts of rational decisions, sophistication, investors with appropriate knowledge, and access to all relevant facts.

The illusion of skills, a concept (Kahneman, 2011) first presented, is an important notion to consider. According to this theory, individuals who invest in the financial markets suffer from a cognitive bias known as the "illusion of expertise," which influences their way of thinking and, as a result, their decision-making process (O'Brien, 2012). This illusion, which is strengthened by the context in which financial actors have studied and evolved professionally, leads financial actors to assume they always have all the information required to foresee how investments will develop in the future (Kahneman, 2011). They underline how financial professionals may produce reasonable hypotheses in the face of a highly uncertain scenario, which is significant given that forecasts are, by definition, unpredictable. Short-term tendencies and behaviors can be predicted more easily than long-term horizons by considering previous behaviors and results; however, it is important to remember that tests and real-world situations are distinguished by particular context factors that make each situation unique (Kahneman, 2011). Furthermore, due to constrained rationality and information asymmetry, as shown by (Akerlof, 1970), people do not make rational decisions. In fact, (Akerlof, 1970) draws attention to the fact that people are commonly motivated to sacrifice

their long-term privacy in return for instant rewards. This is something that needs to be taken into consideration. Investors' lack of financial knowledge and competence and businesses', banks', and rating agencies' lack of document disclosure all contribute to increased information asymmetry in the financial markets (Barlevy & Veronesi, 2000). In addition, it is essential to consider and analyze the behaviors of investors and the choices they make regarding their investments. Investor behavior is influenced by the cognitive (mental processes) and affective (emotional) concerns of financial actors as indicated during their financial planning and investment management processes(Kahneman & Tversky, 1979). According to (Barlevy & Veronesi, 2000), investors' decision-making processes are fundamentally influenced by various factors, including their past experiences, individual convictions, and preferences. Today, investors are much more interested in sustainable investments as they realize the need to incorporate ESG considerations into their decision-making. Therefore, by studying the EESG's moderating role between behavior biases and investment decisions, this article makes it feasible to develop more successful investment strategies. This paper advances our understanding of the relationship between behavioral biases and sustainable investing.

2. REVIEW OF LITERATURE

Traditional economic theory is based on the assumption that investors behave reasonably while selecting a variety of choices. (Muhammad & Maheran, 2009). Standard financial practices include a variety of concepts and theories, such as the anticipated utility theory, which explains how to make rational decisions when you are unaware of the repercussions of your actions. Among the other concepts and theories that make up standard financial practices is the capital asset pricing model. The basic slogan of this strategy is "choose the action that will have the greatest predicted utility." (Bernoulli, 2011). The Markowitz portfolio principles are a method for managing investment portfolios to reduce risk. This method may be traced back to a study that Nobel Prize winner Harry Markowitz published in 1952. According to the principle, an investor may maximize the anticipated returns of a portfolio by diversity if they have a preferred amount of risk (Markowitz, 1991), the capital asset pricing model, according to which the expected return on an asset is equal to the risk-free rate plus a risk premium. The return on a risk-free investment, such as a US Treasury Bond, is referred to as the risk-free rate, and it symbolizes the time worth of money. The risk premium represents the additional return from investing in a hazardous asset (Treynor, 1961) etc. To explain the effectiveness of the market that contains all the information available while making financial decisions, investors are assumed rational. Despite the fact that the aforementioned theories are all largely recognized by academics, they have not been able to address some issues, such as the reasons behind market bubbles and collapses and the elements that contribute to unpredictable events (Sharma & Kumar, 2019). After analyzing the data, they found that using behavioral finance—which goes against all widely held beliefs and logical investor presumptions— always produced the best financial outcomes. Human emotions, attitudes, and psychological biases can have irrational and ineffective effects on investor decision-making. As a result, behavioral finance—a novel approach to finance—emerged in the 1980s from the disciplines of psychology, economics, and sociology. It deals with investor psychology and aims to explain how psychological flaws affect their decision-making process. (Kahneman & Tversky, 1979). Behavioral finance investigates the perplexing behavioral traits of people involved in the financial markets while taking into account their feelings, psychology, sociology, and other relevant elements. The focus is on the different investor behavior and how they affect the investor's decision (Yoong & Ferreira, 2013). One of the key phases in the transition from the conventional notion to the contemporary concept of behavioral finance is the creation of another theory that is prospect theory, which substitutes the anticipated utility traditional theory (Tversky & Kahneman, 1991). This study revealed the presence of irrationality, overreaction, and loss aversion among investors. According to (Bernoulli, 2011), "risk" is the phenomenon that can be used to differentiate the present from the past. Bernoulli makes this assertion. On the other hand, risks can also be viewed as "mental representations of threats" that have the potential to result in "real losses" (Rehan & Umer, 2017). Risk and the human response that it elicits are important to every aspect of economic activity. According to the "theory of choice under risky conditions," the most difficult aspect of making decisions in precarious situations is coping with the volatility of the surrounding economic environment. As a result, it is difficult to understand how people respond to ambiguous and constantly changing dispositions. Therefore, (Muhammad & Maheran, 2009)in the constantly changing financial market, the investors are always seeking the best technique to mitigate investment risk. In the modern era, one of the most widely used techniques to reduce the level of risk associated with assets type is EESG. Because stronger EESG performance is correlated with higher returns, reduced risk, and long-term company sustainability, investors are becoming more and more interested in ESG criteria for evaluating businesses.

The majority of the research that can be found in the EESG literature focuses on the performance of sustainable assets. This research attempts to evaluate whether or not such investments are costly and whether or not they have an effect on the financial performance of a portfolio. In contrast to earlier studies, which tended to focus on establishing the relationship between an asset's sustainability and performance, recent research has looked at the process by which an asset's sustainability might affect performance. This is in contrast to prior studies, which tended to concentrate on establishing the relationship between an asset's sustainability and performance. The fact that reputable financial periodicals are publishing so many articles

on ESG investing is indicative of the subject's growing significance. Recent years have seen a rise in interest in the Sustainable Investment Theory (SIT), which places a strong emphasis on the incorporation of Economic, Environmental, Social, and Governance (EESG) considerations into investment decisions (Park & Oh, 2022). This approach aims to capture long-term financial returns by influencing investor behavior while benefiting society. As such, it is highly relevant to the present study. For individual investors, the Sustainable Investment Theory provides a crucial tool for investing that align with their values and beliefs. As private investors become more interested in sustainable investments, they are more likely to consider ESG factors and participate in investing funds in an ethical, sustainable, and responsible (Lagerkvist et al., 2020). Incorporating ESG factors is increasingly critical, as they significantly influence the risk and return profile of a portfolio. By considering sustainability factors in their investment decisions, individual investors may improve their portfolios' long-term performance while contributing to a more sustainable and equitable world.

Recent studies have highlighted the significance of investors' risk perception as a predictor of investment decisions. Other characteristics that affect investment decisions include risk propensity, loss aversion, and risk perception (Sindhu & Kumar, 2014). The personal trait of risk propensity may change over time (Sitkin & Pablo, 1992). The prospect theory suggests that investors are more likely to base their decisions on gains rather than losses due to loss aversion bias. However, incorporating sustainable business practices and considering ESG factors in investment decisions has improved performance (Pullman et al., 2009). It is substantial to note that other factors, such as the cost and benefits of the investment, may also influence investment decisions, leading investors to deviate from rational decision-making (Cascio et al., 1997).

Investors need to gather as much information as possible to make optimal investment decisions. Recent research indicates that companies' operational strategies should include sustainable business practices and consider ESG factors to achieve better performance (Carter et al., 2020; Perdan & Azapagic, 2011). By doing so, companies improve their financial performance and contribute to a more sustainable future. Overall, integrating EESG factors is a critical aspect of investment decision-making, and its incorporation has the potential to benefit investors and society.

The purpose of this study is to investigate how behavioral risk biases, such as risk perception, risk-taking propensity, and loss aversion, play a role in investment decisions and how the influence of sustainable business practices might help mitigate their impact. The following hypotheses were put to the test:

2.1. HYPOTHESIS DEVELOPMENT

2.1.1. RISK PERCEPTION AND INVESTMENT DECISION

Perception and judgment are influenced by information, which can create a picture of the information's results (Rogers, 2017). Decision-making in the face of uncertainty is heavily influenced by risk perception, with cognitive biases having an impact on how people perceive risk. (Simon et al., 2000). Risk perception also impacts investment decisions, with risk-averse investors choosing low-risk assets over high-risk ones (Aren & Zengin, 2016; Hariharan et al., 2000). Understanding risk perception is essential to comprehend how individuals behave and make choices in dangerous situations (Forlani & Mullins, 2000). Mental state and personality can also affect risk perception (Wulandari & Iramani, 2014). It is vital to determine if investors in Pakistan consider risk perception when making investment decisions in order to explore the impact of risk perception on investment decisions.

H1: Risk perception has a significant effect on investment decisions.

2.1.2. RISK-TAKING PROPENSITY AND INVESTMENT DECISION

The chance of unfavorable events in the future is referred to as "risk" (Dictionary, 2021). Simply put, risk propensity refers to a person's predisposition to take risks. According to Hung and Tangpong (2010), A person's decision to accept or avoid risks is determined by their risk propensity, a dynamic trait that changes over time as a result of their experiences. Decision-making in dangerous settings is heavily influenced by risk perception and propensity. (Sitkin & Weingart, 1995). Risk perception refers to how an individual perceives uncertainty in a given scenario, while risk propensity is their willingness to take risks. Several studies have demonstrated that risk propensity predicts decision-making attitudes in risky situations (Hochman et al., 2016; Sitkin & Pablo, 1992). These factors play a significant role in investors' direct and indirect decision-making (Hung & Tangpong, 2010). Further research is needed to investigate whether Pakistani investors consider their risk-taking propensity while making investment decisions.

H2: Risk-taking perception has a significant effect on investment decisions

2.1.3. LOSS AVERSION AND INVESTMENT DECISION

People have a tendency to be more emotionally impacted by losses than by wins; this tendency is referred to as loss aversion, and it was first postulated as a behavioral bias Tversky and Kahneman (1991). Recent research has focused on how avoiding losses influences the decision-making process about investments. Arora and Kumari (2015) found that remorse and aversion to loss reduce the effect that age and gender have on investor risk tolerance. Kumar and Babu (2018) investigated the effects of the loss aversion bias on investors in the United States and the United Kingdom's financial markets. They discovered that investors' propensity to avoid losses has a considerable impact on the decisions they make, particularly during bull markets. Similarly, Mahina et al. (2017) discovered that investors on the Rwanda stock exchange are susceptible to loss aversion bias, which influences their decision-making. Rau (2014) studied the influence of gender on the loss aversion bias; it was

discovered that female investors were more likely to be loss averse than male investors. (Ert & Erev, 2013) also carried out an experiment to demonstrate that loss aversion bias has an effect on decision-making when the choices at hand entail both gaining and losing, but it does not have this effect when the outcome simply involves gaining. As a result, it is not unreasonable to suppose that Pakistani investors consider loss aversion while making investment decisions.

H3: Loss aversion has a significant effect on investment decisions

2.1.4. SUSTAINABLE BUSINESS PRACTICES AND INVESTMENT DECISIONS

Sustainable business practices are becoming increasingly popular worldwide (Abid et al., 2020, 2021; Contreras, & Abid, 2022), particularly in industrialized Western countries, due to the numerous social and environmental issues that plague the modern world, such as gender inequality, conflict, social inequality, unequal income distribution, economic failures, extreme poverty, climate change, habitat loss, and species and ecological loss. Incorporating sustainable business practices into the private sector could help resolve many of these problems. Understanding sustainable business practices, values, and guiding principles are essential for comprehending their definition and analysis. Sustainable business practices lack a universal definition, but incorporating sustainable development concerns into investment decision-making has become increasingly relevant in recent years. Multiple academic papers and scientific studies examine integrating sustainability considerations into the strategic decision-making (Amel-Zadeh & Serafeim, 2018; Barton & Wiseman, 2014; Cappucci, 2018). As a result, our study aims to investigate whether Pakistani investors consider the influence of sustainable business practices on their investment decisions.

H4: sustainable business practices have a significant effect on investment decisions

2.1.5. SUSTAINABLE BUSINESS PRACTICES AND RISK PERCEPTION IN INVESTMENT DECISION

Affording to Glette-Iversen et al. (2022), the risk is an inherent part of life, and individuals learn to assess and reduce risks while choosing from various possibilities. Risk perception is crucial to the stock market's survival and growth in the current economic climate. Covey (2022) notes that different schools of thought examine how individuals process decision-making when faced with multiple outcomes or potential losses, also known as risk decisions. Psychology has extensively studied risk perception as a personality trait that can impact a firm's success in investing. Investors with a risk-averse personality trait are likelier to choose low-risk investments. In contrast, those with a risk-taking personality trait are willing to take on high-risk investments for a greater return. However, investors' perceptions of risk can change based on an investment's sustainability and return potential. Furthermore, risk perception can vary based on investors' characteristics, such as their prior investment experience. Changes in risk perception can significantly affect investment success. Thus, it is essential to investigate whether Pakistani investors with varying risk perceptions consider sustainable business practices as a moderator of their investment decisions.

H5: sustainable business practices moderate the relationship between Risk perception and investment decision

2.1.6. SUSTAINABLE BUSINESS PRACTICES AND RISK-TAKING PROPENSITY IN INVESTMENT DECISIONS

Sustainable business practices are becoming increasingly crucial for businesses to mitigate environmental and social risks and enhance financial performance and investor confidence (Abid et al., 2023; Ashfaq et al., 2022; Ilyas et al., 2020; Rank et al., 2022). Risk-taking propensity plays a crucial role in shaping investment decisions. However, research has shown that sustainable business practices can moderate the relationship between risk-taking propensity and investment decision-making. According to a study by Yu et al. (2021), companies that have solid sustainability practices are perceived as less risky by investors, which can lead to increased investment. The study found that companies with high sustainability scores had a lower risk perception by investors, which can reduce their cost of capital and enhance their access to finance. Moreover, a study by Babiak and Trendafilova (2011) found that companies that adopt sustainable practices can better manage risks related to environmental and social issues. This can help mitigate reputational, regulatory, and supply chain risks, which are becoming progressively important for investors to consider when making investment decisions. Furthermore, a study by Semenova and Hassel (2019) found that companies with strong sustainability performance were more likely to be measured as attractive investment targets by institutional investors. The study found that these companies were more likely to be included in institutional investors' portfolios, who are increasingly incorporating EESG factors in their investment decisions.

H6: sustainable business practices moderate the relationship between Risk taking propensity and investment decisions

2.1.7. SUSTAINABLE BUSINESS PRACTICES AND LOSS AVERSION IN INVESTMENT DECISION

Research has consistently shown that incorporating sustainable business practices into investment decisions can effectively mitigate the impact of loss aversion for individual investors. In a study by Tantalo and Priem (2016), individual investors were more willing to invest in companies that demonstrated a solid commitment to sustainability. These companies were perceived as more attractive investment opportunities. This sentiment is also reflected in (Sajeev et al., 2021). According to the results of a study called the Global Investor Study, 71 percent of individual investors believe that sustainable investing can lead to superior long-term profits. Seventy-five percent of individual investors and ninety-five percent of millennial investors are concerned about sustainable investing, according to a survey conducted by the Morgan Stanley Institute for Sustainable Investing. This finding demonstrates the growing popularity of incorporating economic, environmental, social,

and governance (EESG) factors into investment decisions.

H7: Sustainable business practices moderate the relationship between loss aversion and investment decisions

Based on the discussed existing studies and theoretical support, the study proposed the following research framework:

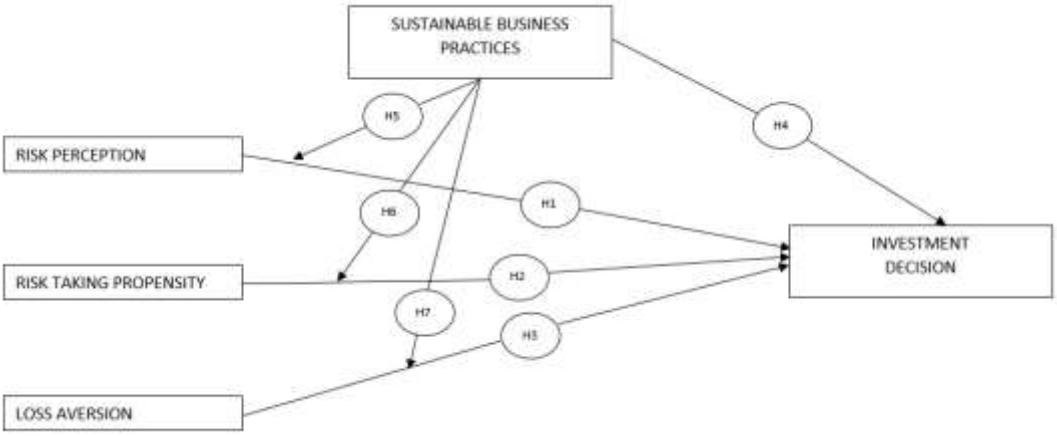

Fig 1: Research Framework

3. METHODOLOGY

3.1. SAMPLING AND DATA GATHERING

This research aims to explore the influence of behavioral variables on the decisions made by individual investors by assessing the moderating impact of sustainable business practices. These practices include economic, environmental, social, and governance issues. Specifically, this research will focus on these issues. In order to accomplish this goal, a standardized questionnaire was sent out to all of the individual stock market investors in Pakistan. The secondary information that was used in this study came from a wide variety of publications, such as books, academic journals, and internet journals. The research method takes a quantitative and deductive approach and makes an effort to investigate the observable and quantifiable behavioral aspects that influence investment decisions. These factors include the impact of a country's economic, environmental, social, and governance performance. An estimated 220,000 individual investors, 1,886 international institutional investors, and 883 local institutional investors were chosen as study participants using a selection method known as convenience sampling. This method is considered to be a valid selection approach because it involves choosing study participants who are readily available. In order to collect information, 400 questionnaires using a Likert scale were delivered to investors in the Pakistani stock market. Out of these, 146 investors were selected to participate in the study. The questionnaire requires the respondents to select one of the following responses: "strongly agree," "agree," "not sure," "disagree," or "strongly disagree." In order to study the connection between the variables and their implications, we will be focusing on five different aspects: risk perception, risk-taking propensity, loss aversion, sustainable business practices, and investment decisions. The purpose of the research is to investigate both the relationships between the independent variables and the relationships between the variables that are being considered here.

3.2. EMPIRICAL FINDINGS

Recent research has recommended partial least squares structural equation modeling (PLS-SEM) as an innovative measuring technique due to its thorough analysis a (Elahi et al., 2020; (Jeong et al., 2020). This technique is highly flexible and suitable for lower data needs and concerns with normality (Henseler et al., 2012). In the current research, analysis and the testing of hypotheses were carried out with the assistance of the two-step technique and SmartPLS. In the first step of developing the measurement model, a confirmatory factor analysis that incorporated both convergent and discriminant validity was used. The moderation analysis and route studies were included in the second step of the structural model estimate process. In addition to these tests, assessments of robustness, non-linearity, ft indices, heterogeneity, and endogeneity were carried out in order to evaluate the data norm (Lu & Li, 2020).

3.3. MEASUREMENT MODEL EVALUATION

The measurement model evaluation used both the convergent validity approach and the discriminant validity method to check the reliability and validity of the data (F. Hair Jr et al., 2014; Fornell & Larcker, 1981). In order to evaluate the convergent validity, we used techniques such as factor loading, composite reliability, Cronbach's alpha, and average variance extracted (AVE). In the meantime, the discriminant validity was evaluated with the help of the Fornell-Larcker criteria and the heterotrait-monotrait ratio (HTMT) (Fornell & Larcker, 1981; Henseler et al., 2015). Validation of the measurement model

in previous investigations can be accomplished with success using these strategies. The following table provides an illustration of the convergent validity:

Table 1: Convergent Validity

First Order	Second Order	Items	Loading	Alpha	CR	AVE
Risk Perception		RP1	0.888	0.869	0.911	0.719
		RP2	0.862			
		RP3	0.779			
		RP4	0.858			
Risk Taking Propensity		RTP2	0.808	0.920	0.940	0.757
		RTP3	0.864			
		RTP4	0.898			
		RTP5	0.911			
		RTP6	0.866			
Loss Aversion		LA1	0.871	0.926	0.944	0.771
		LA2	0.875			
		LA3	0.894			
		LA4	0.871			
		LA5	0.879			
Social Sustainability		SS1	0.696	0.926	0.937	0.558
		SS2	0.669			
		SS3	0.706			
		SS4	0.853			
		SS5	0.857			
		SS6	0.777			
		SS7	0.844			
		SS8	0.850			
		SS14	0.686			
		SS15	0.666			
		SS18	0.632			
		SS19	0.677			
Environmental Sustainability		EVS3	0.877	0.878	0.917	0.736
		EVS4	0.886			
		EVS5	0.915			
		EVS6	0.743			
Governance		G3	0.932	0.921	0.949	0.861
		G4	0.950			
		G5	0.901			
Economic Sustainability		ES7	0.845	0.856	0.899	0.690
		ES8	0.839			
		ES9	0.855			
		ES10	0.781			
	Sustainable Business Practices	SS	0.743	0.884	0.890	0.583
		EVS	0.855			
		G	0.928			

	ES	0.830			
Investment Decision	ID1	0.829	0.925	0.939	0.657
	ID2	0.798			
	ID3	0.845			
	ID4	0.792			
	ID5	0.747			
	ID6	0.819			
	ID7	0.844			
	ID8	0.806			

The results of the inquiry into the convergent validity of the measurement model are presented in the table. In the first column are stated the constructs or variables that are the focus of the research, and in the second column are mentioned the items that are used to assess those constructs. The third column contains a listing of the factor loading, which indicates the magnitude of the correlation that exists between each item and the construct that is associated with it. The value of Cronbach's alpha, which is presented in the fourth column, is used as a measurement of the internal consistency or reliability of the items contained inside each construct. The fifth column contains information regarding the composite reliability (CR), which is an extra reliability metric that takes into account the intercorrelations between the items. The sixth column is given the average variance extracted (AVE), which represents the variation in the items that were collected by the construct. The results imply that all constructs have adequate levels of convergent validity due to the high factor loadings, Cronbach's alpha values, CR values, and AVE values that were found for each construct. The concepts of risk perception, risk-taking propensity, loss aversion, governance, social sustainability, economic sustainability, sustainable business practices, and investment decision all have high degrees of convergent validity, particularly due to the fact that their AVE values are more than 0.5. Because the AVE value for the concept of social sustainability is rather low, this may indicate that some components do not adequately represent the concept as a whole.

3.4. STRUCTURAL MODEL ASSESSMENT

The structural model assessment highlighted results on the forecast hypothesis by the use of coefficients (β), p-values, t-values, standard errors, upper limit and lower limit derived using the 5000-bootstrapping process in PLS-SEM. In contrast, the p-value of 0.05 and the absence of a zero value between the upper and lower limit are the benchmark levels that are used to decide whether or not to accept the projected hypothesis. If none of these conditions is met, the hypothesis is rejected.

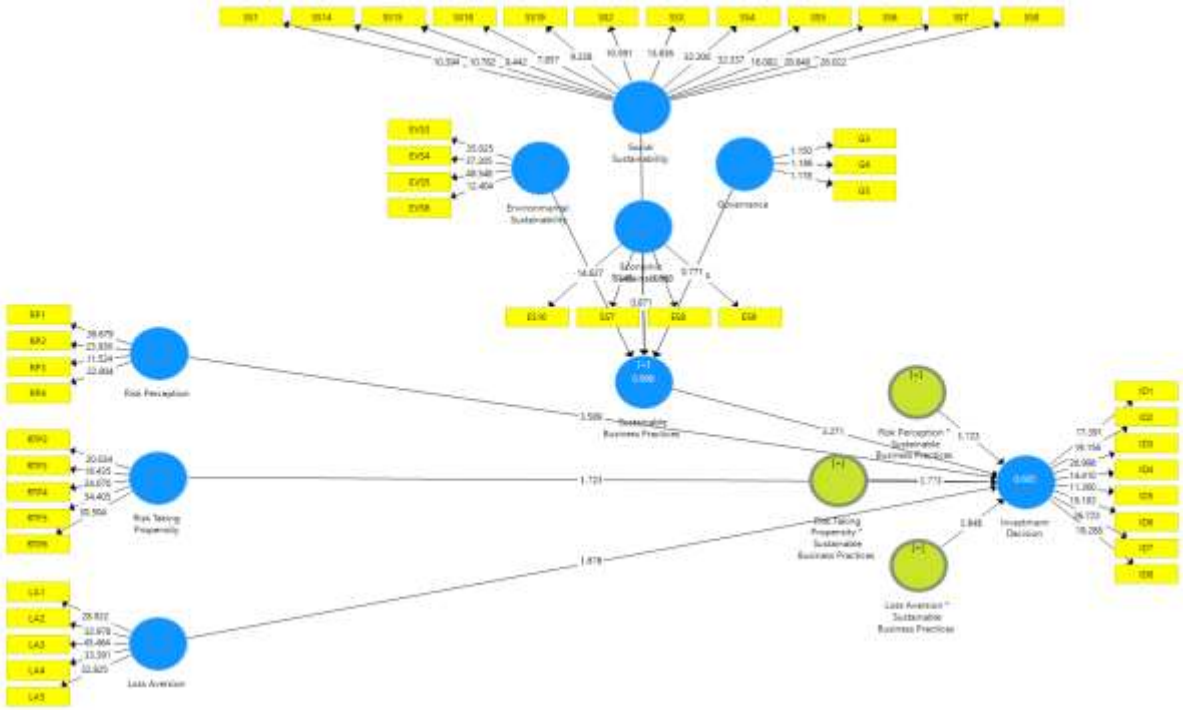

Figure 2: Structural model assessment [source: authors' design by using SmartPLS 3]

3.5. Discriminant Validity

Table 2: Farnell Larcker Criteria

Ist Order	Economic Sustainability	Environmental Sustainability	Governance	Investment Decision	Loss Aversion	Risk Perception	Risk Taking Propensity	Social Sustainability
Economic Sustainability	0.830							
Environmental Sustainability	0.170	0.858						
Governance	0.400	0.111	0.928					
Investment Decision	0.072	0.571	0.039	0.811				
Loss Aversion	0.199	0.716	0.140	0.599	0.878			
Risk Perception	0.161	0.609	0.069	0.760	0.656	0.848		
Risk Taking Propensity	0.142	0.466	0.074	0.505	0.446	0.539	0.870	
Social Sustainability	0.133	0.766	0.070	0.756	0.750	0.701	0.587	0.747

Table 3: Discriminant Validity (Farnell Larcker Criteria)

2nd Order	Sustainable Business Practices
Sustainable Business Practices	0.618

Table 4: HTMT Ratio

Ist Order	Economic Sustainability	Environmental Sustainability	Governance	Investment Decision	Loss Aversion	Risk Perception	Risk Taking Propensity	Social Sustainability
Economic Sustainability								
Environmental Sustainability	0.181							
Governance	0.445	0.135						
Investment Decision	0.097	0.632	0.085					
Loss Aversion	0.206	0.794	0.154	0.644				
Risk Perception	0.168	0.697	0.101	0.839	0.728			
Risk Taking Propensity	0.180	0.506	0.089	0.529	0.475	0.589		
Social Sustainability	0.152	0.851	0.092	0.831	0.810	0.786	0.626	

Table 5

2nd Order	Sustainable Business Practices
Sustainable Business Practices	0.000

To evaluate the discriminant validity, Henseler et al. (2015) recommended an alternative system called "the heterotrait-monotrait ratio of correlations," which is based on the "multitrait-multimethod matrix" (Henseler et al., 2015). The HTMT ratio may be used to assess discriminant validity in two ways: as a condition and as a statistical test (Henseler et al., 2015). The HTMT ratio in the primary method should be less than 0.85 or less than 0.90 (Clark & Watson, 2019). The above-mentioned conditions are exceeded when the HTMT ratio is above them, which compromises discriminant validity. The second test contrasts the null hypothesis (H0: HTMT 1) with the alternative hypothesis (H1: HTMT 1), and it determines if discriminant validity is present if the confidence interval contains the value one. In this study, the HTMT ratio was used to assess the discriminant validity using the first criterion approach. The table displays the HTMT ratio for all construction parameters. All of the HTMT ratio values for the structures, as shown in the table, were less than 0.90 and satisfied the HTMT0.90 standard. These findings proved the discriminant validity of each component.

Table 6

Path Analysis	Beta	SD	T	P	LL	UL	Remarks
Risk Perception -> Investment Decision	0.449	0.125	3.589	0.000	0.345	0.555	Significant
Risk Taking propensity -> Investment Decision	0.018	0.080	1.723	0.012	0.042	0.095	Significant
Loss Aversion -> Investment Decision	0.072	0.125	1.676	0.028	0.173	0.038	Significant
Sustainable Business Practices -> Investment Decision	0.511	0.156	3.271	0.001	0.342	0.609	Significant

Table 7: A path analysis

Moderation Path	Beta	SD	T	P	LL	UL	Remarks
Risk Perception * Sustainable Business Practices -> Investment Decision	0.030	0.135	1.722	0.020	0.052	0.164	Significant
Risk-Taking Propensity * Sustainable Business Practices -> Investment Decision	0.070	0.090	1.773	0.000	0.131	0.029	Significant
Loss Aversion * Sustainable Business Practices -> Investment Decision	0.117	0.137	1.848	0.019	0.004	0.222	Significant

Results include regression coefficients (Beta), standard deviations (SD), p-values (P), lower and upper bounds, and comments on the relationships between the independent variables (risk perception, risk-taking propensity, loss aversion, and sustainable business practices) and the dependent variable (investment decision).The individual associations between the independent and dependent variables are displayed in the first section. The substantial p-values and positive beta values show that all four independent factors have a significant positive link with investment decisions. In particular, Risk Perception has a beta of 0.449, Risk Taking Propensity has a beta of 0.018, Loss Aversion has a beta of 0.072, and Sustainable Business Practices has a beta of 0.511, the highest number.The second section shows the interaction effects of Sustainable Business Practices with the other independent variables on the dependent variable.

All three interaction effects are significant and positive, as indicated by the significant p-values and positive beta values. Specifically, Risk Perception * Sustainable Business Practices has a beta of 0.030, Risk Taking Propensity * Sustainable Business Practices has a beta of 0.070, and Loss Aversion * Sustainable Business Practices has the highest beta value of 0.117. Overall, the findings point to Sustainable Business Practices having the strongest beneficial impact on investment decisions. Investment decisions are highly influenced by the interactions between Sustainable Business Practices and the other independent factors. This suggests that companies that prioritize sustainable business practices are more likely to make investment decisions that support sustainability objectives and that a sustainability-focused approach strengthens the effects of risk perception, risk-taking propensity, and loss aversion on investment decisions.

3.6. ASSESSMENT OF UNOBSERVED HETEROGENEITY

The unobserved heterogeneity was thoroughly identified and addressed using the PLS path model. It is used to recognize and comprehend changes or distinctions among people or things that cannot be observed or quantified directly. Using the slope analysis graph shown below, the interaction impact of SBP and investor risk behavior on investment choice was demonstrated: The moderating effect of SBP on the association between risk perception and investment decisions is significant. The green line represents the high level of SBP, specifically at SD+1 (presumably one standard deviation above the mean). It indicates that as SBP increases, the effect of risk perception on investment decisions becomes more pronounced. In other words, individuals with higher levels of SBP show a stronger relationship between risk perception and their investment decisions.

This finding suggests that SBP plays a crucial role in increasing investment decisions, as it enhances the impact of risk perception.

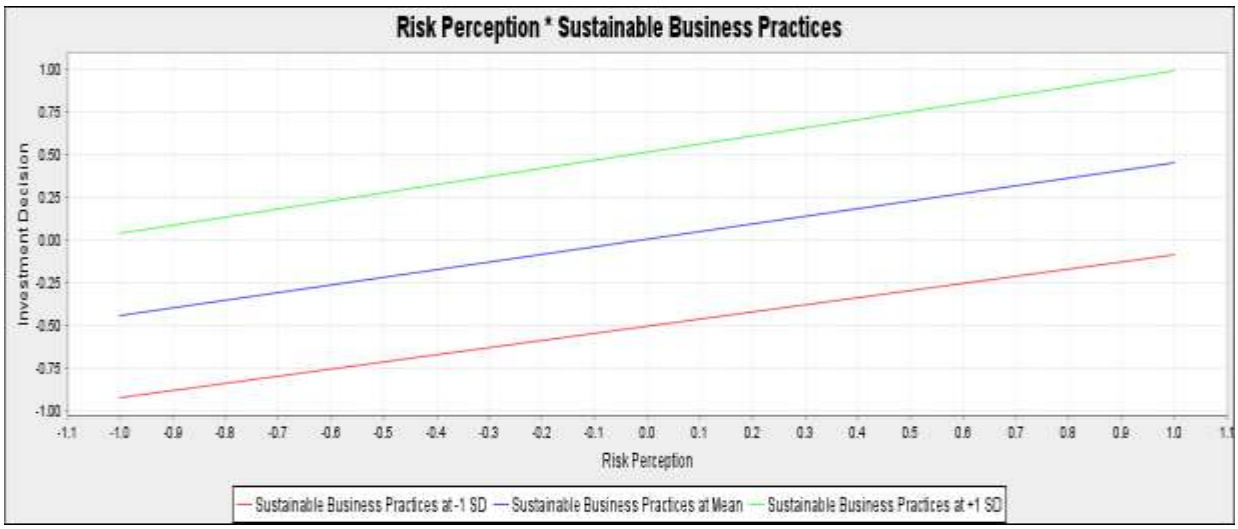

Figure 3: Interaction term [source: authors' design using SmartPLS]

On the other hand, the red line represents the lower level of SBP, specifically at SD-1 (presumably one standard deviation below the mean). It also exhibits a positive slope, indicating that even at lower levels of SBP, an increase in SBP still enhances the effect of risk perception on investment decisions. This suggests that SBP remains a significant factor in influencing investment decisions, regardless of whether it is at high or low levels.

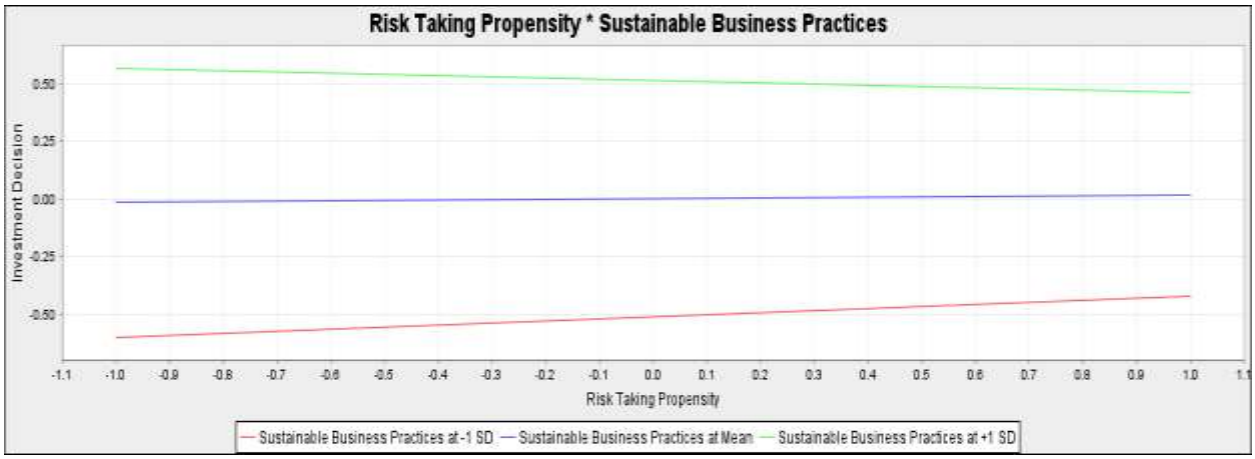

Figure 4: Interaction term [source: authors' design using SmartPLS]

The slope analysis observes how the relationship between risk-taking propensity and investment decision fluctuations at different levels of SBP. The red line, corresponding to a lower moderator level of SBP, shows a positive and steeper slope. This specifies that as risk-taking propensity increases, the effect on investment decisions becomes stronger. In other words, individuals with lower levels of SBP are more influenced by their risk-taking propensity when making investment decisions. This suggests that sustainable business practices may play a moderating role in amplifying the impact of risk-taking propensity on investment decisions for individuals with lower levels of SBP.

On the other hand, the green line representing a higher level of SBP shows a flatter slope. This implies that as risk-taking propensity increases, the effect on investment decisions is weaker. Individuals with higher levels of SBP exhibit a more muted association between risk-taking propensity and investment decisions. This indicates that sustainable business practices may act as a diminishing factor, reducing the influence of risk-taking propensity on investment decisions for individuals with higher levels of SBP.

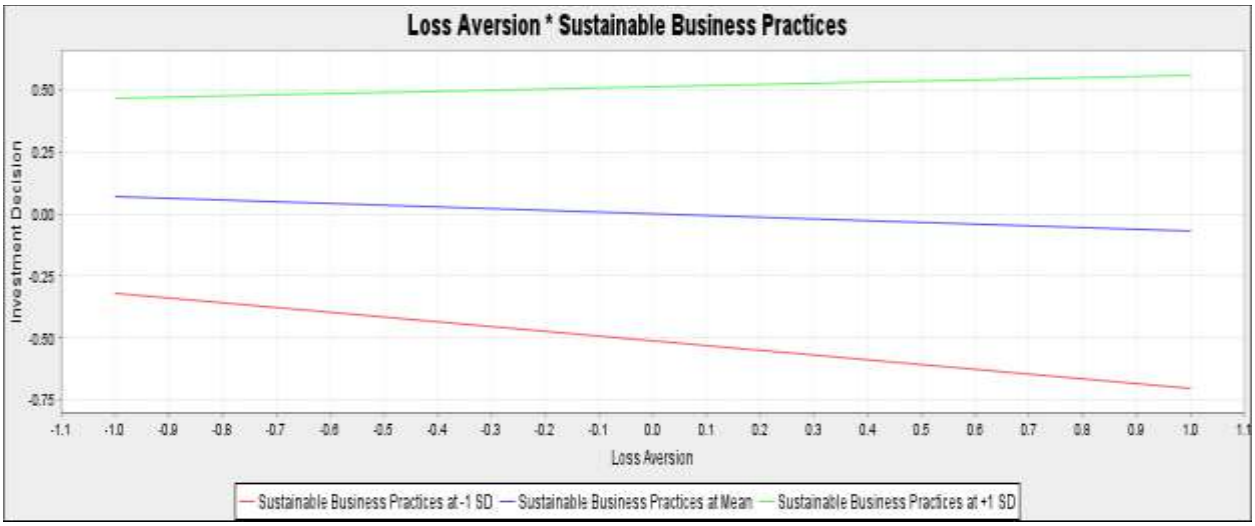

Figure 5: Interaction term [source: authors' design using SmartPLS]

This simple slope analysis inspects how the relationship between loss aversion and investment decisions changes at different levels of SBP. The analysis provides two lines: a red line representing lower levels of SBP and a green line representing higher levels of SBP.

The green line representing higher levels of SBP displays a flatter positive slope. This suggests that as loss aversion increases, the effect on investment decisions remains relatively consistent. Individuals with higher levels of SBP show a more stable association between loss aversion and investment decisions. This shows that sustainable business practices may have a less pronounced moderating effect on the relationship between loss aversion and investment decisions for individuals with higher levels of SBP.

The red line, consistent with lower levels of SBP, exhibits a negative slope. This indicates that as loss aversion increases, the effect on investment decisions weakens. In other words, individuals with lower levels of SBP are less influenced by loss aversion when making investment decisions. This suggests that sustainable business practices may mitigate the impact of loss aversion on investment decisions for individuals with lower levels of SBP.

4. DISCUSSION AND CONCLUSION

The study looked at how risk perceptions, risk-taking propensity, loss aversion, and sustainable company practices affected investment decisions. The findings showed a substantial and positive link between risk perception and investment decision, suggesting that as risk perception rises, choice of investments is likely to be more cautious. This result is consistent with other studies suggesting that risk perception is an important consideration when making investment decisions and thus supports Hypothesis 1.

Similarly, the findings supported Hypothesis 2 by demonstrating that risk-taking propensity had a positive and substantial impact on investment choices. This shows that those who are more risk-taking are more inclined to choose investments that carry a higher level of risk. This finding is also consistent with previous research that has suggested that risk-taking propensity is an essential factor in investment decision-making.

The research also confirmed Hypothesis 3 by demonstrating a strong and positive link between loss aversion and investment decisions. This shows that those who are afraid of losing money are more inclined to choose investments with little risk. This result in other studies showed that loss aversion is a crucial consideration when making investing decisions.

The study also discovered that sustainable business practices had a significant, favorable impact on investment decisions, supporting Hypothesis 4. This implies that businesses that implement sustainable business practices are more likely to draw investment, demonstrating the positive effects of sustainable business practices on both the environment and financial performance.

The study also looked at how sustainable business practices affected the link between risk perception, risk-taking propensity, loss aversion, and investment decision. The findings supported Hypothesis 5 by showing that sustainable business practices considerably and favorably regulated the connection between risk perception and investment decisions. This shows that employing sustainable business practices might lessen the detrimental consequences of high-risk perception in the choice of an investment strategy.

Similar to Hypothesis 6, sustainable business practices considerably and favorably influenced the association between investment decisions and risk-taking propensity. According to this result, businesses that embrace sustainable business

practices are more likely to draw investors who are ready to take bigger risks. Lastly, sustainable business practices positively and significantly moderated the relationship between loss aversion and investment decision, supporting Hypothesis 7. This suggests that companies that adopt sustainable business practices are more likely to attract investors who are averse to losses. In making investment decisions, the study emphasizes the significance of risk perception, risk-taking propensity, loss aversion, and sustainable business practices. The results imply that businesses with sustainable business practices are more likely to draw investment, demonstrating that sustainability and financial performance are not incompatible. For investors and governments who want to choose sustainable investments wisely, this report also offers useful information.

4.1. IMPLICATIONS

The study's conclusions have a number of effects on how investors choose to allocate their money. The findings imply that loss aversion, risk-taking propensity, and risk perception all have an impact on investing decisions. Investors should be aware of how their attitudes regarding risk and loss may affect their choice of investments. These psychological variables should be taken into account by financial institutions and advisors when giving customers investing advice.

The study also discovered that the choice to make an investment has a considerable beneficial influence on sustainable business practices. This suggests that in addition to financial gains, investors are increasingly taking their investments' effects on the environment and the community into account. Sustainable business practices increase a company's likelihood of attracting investment from socially conscious investors.

The study also emphasizes how the relationship between psychological elements and investment decision-making may be moderated by sustainable business practices. This shows that employing sustainable business methods might lessen the detrimental effects that risk perception, risk-taking propensity, and loss aversion have on financial decisions. This gives businesses a chance to stand out by implementing sustainable business practices and luring more risk-averse investors.

Overall, the study highlights the significance of taking psychological variables and ethical business practices into account when making investment decisions. In order to make educated and socially responsible investment decisions, investors, financial institutions, and businesses should consider these aspects.

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