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MIND OVER MARKET: THE IMPACT OF BEHAVIORAL FINANCE ON SUSTAINABLE INVESTMENT DECISIONS IN EMERGING MARKETS

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ABSTRACT

This paper investigates how risk perception, herding, loss aversion, and overconfidence—all behavioral finance factors—affect sustainable investment choices in Pakistan's energy industry. In contrast to classical finance theories, which presume rational decision-making, behavioral finance suggests that investor behavior can be influenced by psychological biases. This study examines how these biases influence investment decisions, especially with regard to environmental sustainability, using a survey-based methodology with responses from mid-level managers and workers in manufacturing companies. The findings show a strong positive relationship between environmental sustainability and financial behavior, indicating that behavioral biases affect sustainable investing. For instance, overconfidence frequently results in overtrading and under-diversification, while loss aversion might prevent people from investing in renewable energy because of the perceived dangers. In order to promote sustainable investment, particularly in emerging markets, the practical ramifications highlight the necessity of investor education, supportive regulations, and customized financial products. Nevertheless, drawbacks including the use of self-reported data and a cross-sectional design indicate that other industries, geographical areas, and longitudinal methodologies should be included in future studies. By filling in these gaps, this study offers guidance to investors, financial institutions, and policymakers that want to promote sustainable financial practices and, eventually, strengthen Pakistan's financial system.

INTRODUCTION

Behavioral finance contends that investors are impacted by their emotions, biases, and cognitive limitations, in contrast to classical finance theory, which holds that investors always make logical decisions based on all available information (Almansour & Arabyat, 2017). The impact of non-financial factors on stock prices is a topic of continuous discussion between behavioral finance theory and current finance theory. While behavioral finance theory contends that psychological and emotional factors can influence stock prices, modern finance theory maintains that the stock market is efficient and that stock prices reflect all available information (Almansour, 2015). The scientific community has done a great deal of research on how behavioral finance aspects affect investment choices. Many behavioral finance elements, including as biases, emotional biases, social biases, and others, have been found by researchers to have an impact on investment decisions (Goswami et al., 2020; Kartini & Nahda, 2021; Mahapatra & Mishra, 2020; Sharma

et al., 2021; Singh et al., 2016) and discovered that they can result in less-than-ideal choices.

The necessity to solve a crisis of timber scarcity in medieval Europe led to one of the earliest known uses of the idea of sustainability. In order to deal with this dilemma, Carlowitz (1713) came up with the theory that "the careful management of sustainable forestry resources" may prevent the growing scarcity of wood. This notion combined two complementary ideas that progressively became the norm in the field of forestry. One is that "the preparation of soil for sowing and the care of seedlings" (Carlowitz, 1713) and "the natural growing of wild trees, sowing, growing and planting of seedlings" should be part of the management. The second idea, maintained yield, is a quantitative one: "In technical words, sustained yield management of wood would be regarded to be achieved if, for a given planning period, the total harvest does not surpass the cumulative annual increment (FAO, 1998).

Standard forestry statistics including forest area, standing volume, woody increment, and forest biomass carbon stocks are typically implemented by mandating that their values rise, or at the very least, not fall (e.g. Somogyi and Zamolodchikov, 2007). Daly (1990) generalized a similar idea that has been used in fisheries for eight decades (Russell, 1931): harvest rates should equal regeneration rates where there are renewable capacity.

Understanding how behavioral finance elements affect investors' and stakeholders' decisions to make sustainable investments is a major research gap in Pakistan's energy sector. Few studies examine how certain psychological biases (such as risk aversion and overconfidence) affect investor decisions about sustainable energy projects like renewables versus conventional energy, despite the fact that the energy sector is essential for both economic development and environmental sustainability. In Pakistan's urgent environmental issues and the requirement for a switch to cleaner energy, this disparity is particularly pertinent. Closing this gap could provide important information about how investor psychology helps or hurts efforts to promote sustainable energy. The study's importance stems from its capacity to close the knowledge gap between environmental sustainability and behavioral finance in Pakistan's energy industry. This research may offer important insights for investors, financial institutions, and policymakers by examining how investor psychology—in particular, biases like risk aversion and overconfidence—influences sustainable investment choices.

Literature Review

Environmental Sustainability

Managing resources to satisfy current demands while preserving the capacity of future generations to satisfy their own is known as environmental sustainability (Rockström et al., 2021). This idea encompasses initiatives like lowering carbon emissions, protecting ecosystems, and conserving natural resources. Sustainable practices, such as switching to renewable energy sources and putting waste reduction plans into place, are essential for reducing environmental deterioration in high-impact industries like manufacturing and energy. Sustainability initiatives not only address ecological issues but also support long-term economic resilience and public health in growing economies, where pollution and resource restrictions present major obstacles (Markard, 2020). Sustainability is being emphasized more and more as a basis for contemporary development projects in international frameworks, such as the United Nations Sustainable Development Goals (Sachs et al., 2022).

Behavioral Finance

According to Sewell (2001), behavioral finance is the study of how psychology affects financial professionals' actions and how that influences markets, which helps to explain why and how markets may be inefficient. According to research by Kahneman and Tversky (1974), humans make decisions based on a small set of heuristic principles rather than statistical procedures. Tversky and Kahneman are regarded as the founders of behavioral finance. About 200 papers and articles have been published since the 1960s, the majority of which have dealt with behavioral finance principles (Anissimov, 2004; Barberis & Thaler, 2002). Islam (2012) provided a more detailed definition of behavioral finance by emphasizing the choices on stock market investors' purchases and sales. Gachter et al. (2010) define behavioral finance as a deeper comprehension of how human and societal cognitive and emotional biases influence investing decisions that impact market prices. Behavioral finance was

also described by Ritter (2003) as behavioral elements influencing people's choices.

Behavioral finance, according to Appiah & McMahon (2002), is the study of how financial professionals behave and interact with financial data and the ensuing impacts on markets. According to Pompain (2006), behavioral finance addresses the behavioral aspects that influence financial choices. An investigation of the presence of behavioral biases in the Amman Stock Exchange and their impact on investment performance from the perspective of investors was carried out by Alrabadi et al. in 2017. It specifically examines the consequences of biases like as overconfidence, familiarity, loss aversion, disposition, availability, representativeness, confirmation, and herding.

Overconfidence

Investors frequently overestimate the precision of their own assessments. As a result, researchers concentrated on determining how accurate investors' assessments were and how that related to their confidence. Numerous cognitive behavioral studies and surveys have addressed the issue of overconfidence, when participants exaggerate their own capacity for prediction and the accuracy of the information they have been provided. Overconfidence, according to Nevins (2004), is the tendency to overestimate one's own skills. In the areas where they have some competence, he discovered that analysts and investors were especially overconfident. They agreed that overconfidence can result in overtrading and bad investing choices (Nevins, 2004). However, overconfidence is the propensity for people to exaggerate their skills, knowledge, and the accuracy of their information (Bandari & Deaves, 2006).

The harmful impacts of investors' overconfidence were examined by numerous academics, who found that investors' overconfidence in their own investing skills led to their making poor investment decisions. Because investors tend to undervalue downside risk, trade too frequently, and maintain an under diversified portfolio, prior research has found that the overconfidence factor is one of the most harmful biases that an investor may exhibit.

Loss Aversion

Loss aversion, according to Barberis & Huang (2001), is the difference in the mental consequences that persons may experience from a same magnitude gain or loss. According to several research on loss aversion, the likelihood of suffering a loss is typically twice as strong a motivator as the likelihood of experiencing an equivalent benefit.

When it comes to making financial decisions, loss aversion is a bias that just cannot be accepted. The exact reverse of what investor's desire is sparked by it: higher risk and poorer rewards. Risk should be taken by investors to boost profits rather than to reduce losses (Pompain, 2006).

Risk Perception

The idea of risk perception has been used to explain investor behavior since the 1960s. In the context of investor activity, risk perception is essentially the risk that an investor perceives—whether or not there is a risk—in the equities they trade. The field of investor behavior, which is somewhat comparable to the field of behavioral finance, provides a solid basis for the idea of risk perception. Perception is the process by which a person looks for the best explanation of sensory data so that an investor can base their decision on their level of knowledge and competence.

The subjective process by which people decide how much danger there is and how unpredictable things are is known as risk perception. According to Ricciardi (2004), the concept of risk perception is best applied using an interdisciplinary and multifaceted approach for a particular decision, circumstance, action, or event. The process of making decisions about a financial instrument involves gathering behavioral and financial risk indicators (Ricciardi, 2004).

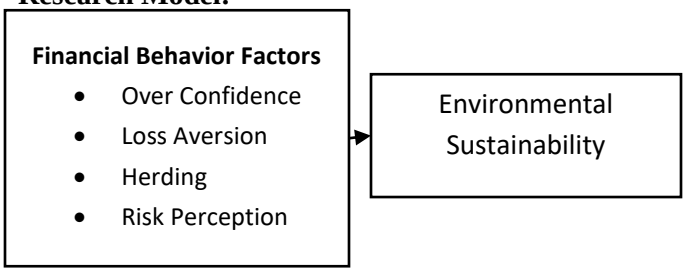
Herding

Herding happens when the influence of public knowledge about a herd's or group's decisions overwhelms the privacy of individuals. It is compatible with constrained rationality to find evidence of group influence in many financial decisions. It may make sense to believe that others are more knowledgeable than we are in an uncertain world and to follow them if we acknowledge that our own judgment is flawed (Hirshleifer & Teoh, 2003).

Characterized herding as the tendency of investors to follow one another into and out of the same stocks, and Sias defined herding as mutual imitation that results in a convergence of action. Therefore, we may say that herd behavior is the tendency of individuals to imitate the activities of a large group (Sias, 2004).

H1: There is a positive relationship between financial behavior factors on environmental sustainability

Research Model:



Methods and procedures:

The proposed model was examined using a survey-based research methodology. Mid-level managers and staff members were briefed about the nature and goal of the study, which was conducted in manufacturing businesses. In order to guarantee that pertinent respondents could be chosen for precise data collection, the convenient sampling technique was used to select the sample (Kirchherr & Charles, 2018). Originally, 250 questionnaires were distributed, and 190 valid answers were returned, yielding an effective response rate of 76%.

Measures:

The measures used in this investigation were modified; the details of each scale are given below.

Behavioral Finance Factors:

The twenty -item scale was developed by (Areiqat,.et al, 2019). One example might be that I would rather lose a lot of money on my stock than lose a lot of money. On the scale, 1 represents strongly disagree and 5 represents strongly agree.

Environmental Sustainability:

Four questions were modified from Akhtar et al. (2018) Four questions were modified from Akhtar et al. (2018) in order to measure ES. One illustration would be that this company uses the fewest resources possible to create the product during the implementation stages of product development. Strongly disagree is represented by a score of one, and strongly agree by a score of five.

Descriptive and Demographic Statistics:

The variables' mean, standard deviation, and correlation are shown in Table 1. The data was not multicollinear since all correlation coefficients between variables were less than 0.70. Additionally, the reliability levels are shown on the diagonal, signifying that the data was trustworthy and appropriate for additional examination.

Based on the demographic analysis, 68.2% of the study's participants were men and 31.8% were women. 5.1% of workers were between the ages of 20 and 25, 35.4% were between the ages of 26 and 30, 35.9% were between the ages of 31 and 35, and 23.6% were between the ages of 36 and 40. 9.7% of employees had less than five years of experience, 25.1% had six to ten years, 33.3% had eleven to fifteen years, 23.6% had sixteen to twenty years, and 8.2% had twenty-one years or more. Of those workers, 11.3% had a college degree, 53.3% had a bachelor's degree, 26.7% had an MS, and 8.7% had another degree.

Variable	Mean	SD	1	2
FB	**4.4**	**.50**	***.97***	***.87***
ES	**4.7**	**.51**	**1**	**.47****

Regression Analysis:

Linear regression is the next step. It is employed when we wish to base the value of one variable on the value of another. The variable we wish to forecast is known as the dependent variable. The independent variable is the one that we use to forecast the value of the other variable. For the variables in this sample, researchers have employed a linear regression analysis. These discoveries, when derived from the entire process, can provide the most significant and

precise data. In linear regression, R is the correlation between Y's observed and predicted values. This coefficient's square, or R square, indicates the proportion of variance in the overall variation that the regression line describes.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.477[a]	.227	.223	.45565

a. Predictors: (Constant), FBMEAN

The R-value indicates the overall association between the study's variables. Nonetheless, the R-value of 0.47 indicates a substantial correlation between environmental sustainability (a dependent variable) and financial behavior (an independent variable). Similarly, R2 offers an evaluation of how well "Financial Behavior" supports "Environmental Sustainability." This analysis's R2 is.227, which is extremely high.
Conversely, adjusted R2 shows how suitable the theoretical model has been. In light of this research, the adjusted R2 is.223 percent, which is encouraging.

Discussions:
The study's conclusions demonstrate how behavioral finance considerations impact sustainable investment choices, particularly in Pakistan's energy industry. Overconfidence, loss aversion, risk perception, and herding are behavioral finance elements that have been found to be associated with environmental sustainability. This shows that these psychological biases have a major impact on decision-making in high-stakes situations. This is consistent with other study showing that financial markets can be influenced by investor psychology (Areiqat, A. Y., Abu-Rumman, et al. 2019). However, our findings fill a vacuum in the literature on sustainable finance in emerging nations by explicitly linking these biases to sustainable investment choices.
The potential of behavioral finance as a tool to forecast sustainable investment trends in the energy industry is highlighted by the noteworthy positive correlation (R = 0.47) between financial behavior (FB) and environmental sustainability (ES). The significance of psychological aspects in financial decision-making, especially in sustainability contexts, is shown by the noteworthy R^2 value of 0.227, which indicates that behavioral finance factors account for a significant amount of the variance in sustainable investment habits. This result supports the claims made by Barberis & Thaler (2006), who suggested that behavioral biases significantly influence investment choices.

Practical Implications:
To lessen the effects of cognitive biases including herd mentality, loss aversion, and overconfidence, financial institutions and government organizations should concentrate on investor education. Investors can make better decisions by participating in training programs that emphasize the dangers of overtrading, under-diversification of the portfolio, and illogical decision-making brought on by herd behavior. A more ecologically conscious financial mindset, which is crucial for industries making the switch to clean energy, can be developed by educating investors on the advantages of sustainable investments. Investment products that cater to behavioral proclivities, like those that address risk and loss aversion while advancing environmental sustainability, could be developed by financial institutions. For instance, developing "green" funds with minimal entry hurdles or managed risk exposure may entice investors who are hesitant to put their money into potentially volatile industries like renewables. Furthermore, by reducing the psychological risk of losses, sustainable investment solutions can be made more appealing to investors by providing insurance or performance guarantees.

Limitations and Future Directions:
The study's sample is restricted to mid-level managers and workers in the manufacturing industry, which may limit the findings' generalizability to other investor groups and industries. To improve the generalizability of the findings, future studies should think about enlarging the sample to include investors from different sectors, investment levels, and

geographical areas. Comparative research with global settings or other developing markets may provide more information about market and cultural variations in sustainability and behavioral finance.

Because participants may underreport or over report their activities and opinions, the use of self-reported survey data may introduce biases like response bias or social desirability bias. Future research could use a combination of approaches, such as longitudinal designs to monitor changes in behavioral finance characteristics over time or self-reported data combined with real investment activities. Furthermore, more objective evaluations of the ways in which biases affect sustainable investment may be obtained through experimental or field-based research.

Using a cross-sectional research design, this study takes a momentary look at investor behavior. Understanding how sustainable investment practices and behavioral finance determinants change in response to shifting market conditions, regulatory frameworks, and environmental awareness may benefit from a longitudinal approach. Monitoring shifts over time may show if particular biases lessen or get worse as sustainable finance gains traction.

This study could be expanded upon in the future by looking into the following topics: Investigating if behavioral biases vary across nations and cultural contexts, especially between developed and emerging economies, by conducting cross-cultural research. Investigating how advances in digital finance, such as robo-advisors and sustainable fintech, might lessen behavioral biases in sustainable investing and possibly increase the accessibility and objectivity of decisions that are sustainability-focused. Analyzing how education and awareness initiatives might help investors make more logical and environmentally conscientious decisions by reducing behavioral finance biases.Examining the ways in which various framing and communication techniques affect sustainable investment behavior, especially in relation to long-term environmental effects as opposed to immediate financial rewards.

Conclusion:

This study emphasizes how behavioral finance elements—like herding, risk perception, loss aversion, and overconfidence—have a big impact on sustainable investment choices, especially in Pakistan's energy industry. The results show that investor behavior might be influenced by psychological biases, which can occasionally impede or misalign decisions with sustainability objectives. Designing interventions, regulations, and financial instruments that encourage sustainable investments requires an awareness of these biases, particularly as nations like Pakistan work to switch to cleaner energy sources.

According to the practical consequences, these biases might be lessened and sustainable investing behaviors improved with the help of focused education, encouraging laws, and customized financial products. This study's concentration on a single business and its dependence on self-reported data are among its significant drawbacks, which emphasize the need for more research that examines a variety of industries, longitudinal data, and other biases. Future studies can provide a more thorough knowledge of the relationship between behavioral finance and sustainable investment by filling in these gaps, which will ultimately help to create a financial ecosystem that is more robust and sustainable.

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