# Regret Aversion And Herding Biases Influence On Investment Decisions: The MediatingRole Of Risk Tolerance

# Anu<sup>1\*</sup>, Dr. Tanu Sood<sup>2</sup>, Dr. Shikha Gupta<sup>3</sup>

<sup>1\*</sup>Research Scholar, PCJ School of Management, Maharaja Agrasen University, Baddi (Himachal Pradesh) India.
 <sup>2</sup>Assistant Professor, PCJ School of Management, Maharaja Agrasen University, Baddi (Himachal Pradesh) India.
 <sup>3</sup>Assistant professor, SRCC, University of Delhi

#### Abstract

This study is to describe the impact of regret aversion and herding biases of investors in investment decision. Risk tolerance used as mediator between regret aversion, herding behaviour and investment decisions. Survey questionnaire was used with sample size of 410 of investors in Indian stock exchange. PLS SEM has been used to check the impact of the variables in this study. Risk tolerance act as full mediator between regret aversion bias and investment decision, where as partial mediator between herding bias and investment decision. The study results showed the significant impact of risk tolerance on investment decision.

Only retail investors limited biases were shown in this study. Many more biases and factors also affect investment decision. Biases might have different effect on institutional investors, Advisor and analyst behavior. This aspect is the limitation of this study. This study is useful for analyst, advisors and investors in the investment decisions.

The present investigation aims to delve into the subject matter at hand, conducting a comprehensive study on the topic herding, regret aversion biases and investment decisions and suggests that these biases can significantly impact decision-making processes.

Keywords: Herding bias, regret aversion bias, risk tolerance, Structure equation modeling and investment decision

#### 1. Introduction

The consideration of investment has gained significance in light of its integral role within the realm of financial planning. Investment is a fundamental requirement for individuals across various socioeconomic backgrounds, as it serves the crucial purpose of safeguarding and augmenting their existing wealth (Novianggie and Asandimitra 2019). One of the crucial responsibilities presented upon an investor is the task of discerning the optimal utilisation of their financial resources, with the aim of attaining their desired objectives. The process of conducting research and making informed decisions regarding investment allocation entails a substantial investment of time. Prior to selecting an investment, it is imperative to undertake a comprehensive evaluation of the myriad of options presently accessible (Khilar and Singh 2020). According to a study conducted by Kubilay and Bayrakdaroglu (2016), it has been observed that there is a growing inclination among individual investors to take investment decisions based on rationality. In their study, Arora and Kumari (2015) conducted an investigation into the methodologies employed by investors in assessing risk and expected returns during the process of making investment decisions. The researchers observed that these investors utilise various models and theories derived from the field of standard finance. However, it is important to note that investors often exhibit irrational behaviour within the market. This behaviour can manifest in various ways, such as engaging in excessive trading, neglecting to consider the fundamental value of stocks before purchasing them, making investment decisions based on the actions of their peers, relying heavily on past performance as a predictor of future success, and holding onto underperforming stocks while selling those that have generated gains. These irrational tendencies can significantly impact investment outcomes and deviate from the rational decision-making processes typically associated with efficient markets. Investors frequently employ herding and regret biases as a means of streamlining their decision-making processes. However, it is important to note that these biases can potentially introduce systematic errors in judgement, thereby resulting ininvestment choices that may be satisfactory but do not necessarily optimise utility.

Numerous empirical investigations have consistently revealed that real-world markets exhibit inefficiencies. These inefficiencies arise from a combination of individual biases and persistent anomalies within the market, thereby contributing to overall market inefficiency (Ajmal et al., 2011). Hence, it is imperative to investigate the intricate workings of psychological biases and their impact on the decision-making and performance of individual speculators. By comprehending the multifaceted nature of investment selection, significant strides can be made towards improving decision-making abilities, mitigating decision-making errors, and ultimately enhancing the performance of individual speculators (Yaowen et al., 2015).

The impact of various factors on investors' decision-making processes can have both positive and negative consequences. For instance, the establishment and maintenance of positive relationships can often facilitate investors in achieving their

desired outcomes and sustaining profitability. Conversely, there are instances where investors may experience significant losses despite making relatively small investments, thereby adversely affecting their investment decision-making processes.

Decision-making involves psychological and cognitive processes that lead to investment choices. Individual investors are typically overlooked in behavioural finance, which ignores fundamental and technical factors in investment decisions. The study examines how investors exploit information to arrive at decisions based on evidence and the impact of emotions on investing decisions (Waweru et al., 2008). Advocates of the behavioural hypothesis claim that investors make irrational investment decisions. Investors tend to buy equities during price increases and sell them during price decreases. Academics and specialists are exploring how emotions and biases influence investor conduct. Heuristics, cognitive illusions, framing effect, and herd mentality play a significant influence in guiding irrational investing decisions (Economou et al., 2011).

The everyday investment decisions are influenced by factors such as propensity, purpose, enthusiasm, and social contact. Investors' investment selections are influenced by the presence of available funds, periodic considerations, and financial ambitions (Muhammad & Abdull/ah, 2009). Investors may demonstrate behavioural biases as a result of technical incompetence and a lack of trust in their decision-making capabilities.

This study aims to examine the potential mediation influence of investor tolerance of risk on the association between investment decision making with herding and regret aversion biases. In the contemporary era, risk is commonly perceived and subsequently addressed through two fundamental approaches. The concept of risk as feelings pertains to the innate and intuitive responses that individuals experience in the face of potential hazards. Risk analysis a systematic approach that applies principles of reason, logic, and scientific consideration to the process of assessing and making decisions about risks (Paul & Ellen, 2006).

### 2. Literature review and Hypothesis Development

Multiple studies have analyzed the influence of psychological biases on the decision-makingof individual investors and the overall effectiveness of financial markets. These researches have been carried out from several viewpoints, considering numerous cultural and environmental aspects. The studies' findings have provided substantial and important insights into this subject domain.

The current study seeks to explore the topic of herding and regret aversion biases in depth, providing a thorough examination. It proposes that these biases might have a substantial influence on decision-making processes. The subsequent part provides an overview of the several literature evaluations concerning herding, regret aversion biases, risk tolerance, and investing decisions.

#### 2.1 Review of existing literature

Loomes and Sugden (1982) provided the initial concept of regret aversion, elucidating its role in motivating individuals and mitigating the occurrence of future regret. Sattar et al. (2020) describe regret aversion as the investor's strong desire to avoid any potential regrets resulting from ineffective investment selections. According to Chen et al. (2018), investors frequently experience regret aversion preferences throughout the process of decision making. Regret isfelt by investors when they make an incorrect option. Regret aversion arises as a result of extending the theory of prospect, as proposed by Kahneman and Tversky in 1979. Furthermore, the decisions made by investors are influenced by their emotions, sentiments, and intuitions, which might result in illogical behavior (Kahneman and Tversky, 1979). According to Zahera and Bansal (2018), when humans experience regret about a decision, it has a significant impact on their psychological well-being. Investors willingly assume greater risks or actively seek out risky opportunities in order to avoid potential future regrets.

The dominant emotion in decision-making appears to be regret aversion, as identified byLoomes and Sugden in 1982. Regret aversion is a cognitive bias characterized by a strong desire to avoid experiencing regret from prior decisions, leading to a tendency to make suboptimal choices. According to Shimanoff (1984), regret aversion is a commonly experienced unpleasant feeling among investors. In addition, the bias of regret aversion leads individuals to retain underperforming assets for an extended period of time and refrain from investinf in undervalued assets as their values decline (Shiller, 2003). Isidore and Christie (2019) defined regret aversion as a cognitive bias that causes individuals to delay making a decision in order to avoid potential feelings of regret. According to Zeelenberg and Pieters (2004), remorse is closely linked to the specific choice or decision being considered. Multiple writers have affirmed the widely accepted notion that investors have a strong aversion toregret and make efforts to prevent it from influencing their decision-making process (Larrick and Boles, 1995; Zeelenberg, 1999; Mellers, 2000; Zeelenberg and Pieters, 2004).

According to Wang et al. (2018), herding behavior may be observed as an information cascade, leading to increasing consensus among people's ideas. Huber et al. (2014) said that information may be considered a type of rational herding. It is believed that the initial choices made by others establish a context in which subsequent decision makers deliberately disregard their own personal knowledge by imitating others. When decision makers lack precise knowledge of a product's true worth, they rely on studying the behavior of its investors to determine its utility. The impact of others'

conduct can be significant to the point where it becomes the determining factor that shapes the information received by decision makers (Duan et al., 2009). Consequently, despite the availability of alternative choices, information can cause investment decisions to overshadow each other and occasionally resultin the rejection of a more effective investment decision (Abrahamson, 1991).

### 2.2. Objectives and Hypotheses Framing

The major objectives of this research are:

- 1. The impact of herding bias on investment decision.
- 2. The impact of regret aversion bias on investment decision.
- 3. The mediating effect of risk tolerance on herding and regret aversion biases withinvestment decision.

Based on an extensive review of existing literature, the present study aims to propose ahypothesis that aligned with the research objectives:

H1. There is a significant effect of herding on investment decision

H2. There is a significant effect of regret aversion on investment decision

H3. Risk tolerance mediates the effect of regret aversion on investment decision

H4. Risk tolerance mediates the effect of herding bias on investment decision

#### 3. Research methodology

#### **3.1 Conceptual Framework**

The conceptual framework depicted in Figure 1 showed the relationship of herding, regretaversion, risk tolerance and investment decision that observed from prior works:



Numerous theoretical frameworks have been proposed in an attempt to elucidate the intricate interplay between psychological biases, investment decisions, and risk tolerance. The aforementioned theories encompass the prospect theory, bounded rationality theory, and

cognitive theory. The primary objective of this research endeavour was to investigate the influence of herding and regret aversion biases on the decision-making processes of individual investors who actively invest in the stock market. Risk tolerance acts as mediator between biases and investment decision. Additionally, this study sought to examine the potential effects of the herding and regret aversion biases on one's tolerance of market efficiency. In order to accomplish the research intended, data collection was conducted through the utilisation of a questionnaire. The questionnaire consisted of closed-ended questions that were posed to the target demographic. The data collected in this study were subjected to analysis using the PLS-SEM software. The sample comprises 410 participants, including retail investors. The selection of participants was based on snowball and judgemental sampling methodology. The hypotheses were examined using Path analysis techniques.

#### **3.2 Instrument Construction**

Investors in the stock market in India were asked to fill out a questionnaire as a way to get first-hand information. There are three parts to the questionnaire. The last three parts used 5 points likert scales, which go from "strongly disagree" to" strongly agree." The first part is about demographic data like gender, age and income. In the second part, there are questions about investments decisions, which is adapted from different research papers like Sarwar and Afaf (2016) and Jain et al. (2023). In the third part, there are questions about regret aversion bias, which used scale developed by Waweru et al. (2008). In the fourth part, there are questions about herding bias, which used scale developed by Kengatharan and Kengatharan (2014). The last part includes questions regarding risk tolerance, which is adapted from Kannadhasan (2015).

#### 3.3 Sample and data collection procedures

An aggregate of 425 questionnaires have been sent to respondent who are investors in stock market in India, out of which 410 questionnaires were fully completed and utilized for comprehensive analysis. Based on the research conducted by Krejcie and Morgan (1970), ithas been determined that a minimum sample size of 384 is necessary in order to provide accurate and uniform findings at a 95% confidence interval for an unidentified population.

### 4. Results analysis

PLS-SEM is appropriate in conducting an analysis, when the focus is on examining a theoretical framework using a predictive standpoint, In instances where the structural model exhibits complexity, encompassing numerous constructs, indicators, and/or model linkages (Hair et al. 2019). In the present study, investment decision is predicted by analyzing various variables. So PLS-SEM is most preferred for this study.

Descriptive	Frequency	Percentage
Gender:		
Male	220	53.65%
Female	190	46.35%
Education:		
Under graduated	112	27.31%
Graduation	158	38.53%
Post graduated or above	140	34.16%
Annual Income:		
O to Rs. 10,00,000	182	44.39%
Rs. 10,00,001 to 20,00,000	94	22.92%
Rs. 20,00,001 and above	134	32.69%

Table 1 presents the demographic aspects, displaying the frequency and percentage of variables such as gender, income and education. It is evident that there are a higher proportion of males compared to females, with around 53.65% of the population being male and the remaining 46.35% being female. In addition, it is observed that out of the total sample size of 410 respondents, there is a frequency of 140 individuals who possess a master's degree in the variable pertaining to educational qualification. The survey data reveals that around 44.39% of the respondents having an income less than Rs.10, 00,000, with a frequency count of 182. Furthermore, it is observed that the proportion of respondents withan income of Rs. 20, 00,000 or more is approximately 32.69%.

#### 4.1 Summary of Analysis

## Table 2: Showing AVE, Composite reliability, VIF, Cornbach's Alpha and outerloading:

Items	Construct	Outer	Composite	AVE	Cornbach's	VIF
		Loadings	Reliability		Alpha	
HB1	Herding Bias	0.857	0.826	0.613	0.825	2.078
HB2		0.816				2.455
HB3		0.835				2.416
HB4		0.864				2.916
RA1	Risk AversionBias	0.89	0.850	0.562	0.851	2.965
RA2		0.809				2.983
RA3		0.82				1.399
ID1	Investment	0.829	0.835	0.589	0.832	1.927
ID2	Decision	0.801				1.785

ID3		0.849				1.668
ID4		0.837				2.169
ID5		0.836				1.741
ID6		0.834				1.612
ID7		0.888				2.491
RT1	Risk Tolerance	0.89	0.759	0.542	0.864	2.563
RT2		0.879				2.380
RT3		0.783				1.344
RT4		0.729				1.357
RT5		0.874				2.247

Seven variables were used in this research for hypothesis testing. The minimum numbers ofitems are 3 and maximum are 8.

Cornbach's Alpha is used to see if the factors in the construct are consistent with each other. The cronbach alpha for each variable was computed. The cronbach alpha of risk tolerance is0.864, herding bias is 0.825, risk aversion 0.851 and investment decision is 0.864. Allvariables cronbach alpha is greater than 0.70, which means variables are reliable in this study. Confirmatory Factor Analysis (CFA) was employed to investigate the factor loadings (FL) of each observed variable upon the latent variable. This enables the assessment of constructs inrelation to their validity. As indicated in Table 1, all of the items that were kept have loadingsexceeding the established threshold value of .70 (Hinkin, 1998).

Furthermore, it is noteworthy to mention that the Composite Reliability (CR) and AverageVariance Extracted (AVE) values for each variable demonstrated a significant level of acceptability and composite reliability is greater than 0.7 and average variance extracted is greater than 0.50, which are in acceptable range.

Table 3: Showing FORNELL LARCKER CRITERION							
			Regret				
	Herding	Investment	Aversion	Risk			
	Bias	Decision	Bias	Tolerance			
Herding Bias	0.879						
Investment							
Decision	0.862	0.855					
Regret Aversion							
Bias	0.806	0.791	0.706				
Risk Tolerance	0.668	0.660	0.575	0.712			

#### \*In table 3, bold values are $\sqrt{AVE}$ , which are higher than other values in the column.

In order to assess discriminant validity, it is necessary to compare the square root of the average variance extracted (AVE) on the diagonal with the correlations on the off-diagonal values. This criterion, as established by Barclay et al. (1995) and Fornell & Larcker (1981), requires that the  $\sqrt{AVE}$  on the diagonally drawn should be more than the correlation coefficient on the off-diagonal values. The findings pertaining to the assessment of discriminant validity have been documented and are presented in Table 3. The present study involved the observation of the diagonally oriented values of all constructs. It was noted that these diagonal values consistently exhibited greater magnitudes compared to the off-diagonal values. This finding suggests that there is no discernible issue with discriminant validity, and instead points towards the presence of strong discriminant validity within the constructs under investigation. The analysis conducted in this research demonstrates a satisfactory levelof validity as well as reliability for the variables under investigation.

#### **Table 4: Showing HTMT Ratio** Herding Investment Regret Latent Variables Decision Bias Aversion Bias Investment Decision 0.771 Regret Aversion Bias 0.707 0.785Risk Tolerance 0.667 0.659 0.575

HTMT ratios are used to check discriminant validity. It should be less than 0.85 (Hair et al. 2020). This suggests that the HTMT criterion is effective in identifying and addressing issues related to collinearity among the latent components, namely multicollinearity. The resultsobtained from the HTMT analysis. According to the HTMT results, Table 5 displays the values that demonstrate the absence of any discriminant validity issues, as per the HTMT0.85 criteria.

Typeeffect of	Effect	Std path	T stats	P		Type of
Typeeneer of	Lifett	coefficient	1 Stats	values	Remarks	mediation
	Herding Bias ->				Significant	
	Investment Decision	0.4	4.108	0	total effect	
Total Effect	Regret Aversion Bias ->				Significant	
	Investment Decision	0.557	2.565	0	total effect	
	Herding Bias -> Risk				Cignificant indirect	Partial
	Tolerance -> investmentDecision				effect	mediation
Total indirecteffect		0.064	4.108	0		
	Regret Aversion Bias ->					Full
	Risk Tolerance->Investment Decision				Significant indirect	mediation
		0.021	2.565	0.01	enect	
	Herding Bias ->				Significant	
	Investment Decision	0.336	6.522	0	direct effect	
	Regret Aversion Bias ->			12.05	No significant	
Direct effect	Investment Decision	0.536	0.044	1	direct effect	
	Herding Bias ->					
Variance	Investment Decision	16%				
AccountedFor	Regret Aversion Bias ->					
(VAF)	Investment Decision	40%				

The results of the hypothesis are shown in table 5. The association between the variables are shown with the help of regression. Risk tolerance partial mediate the effect of herding bias on investment decision. Risk tolerance fully mediate the effect of risk aversion bias on investment decision.

Table 6: Showing VAF					
Effect	VAF	Mediation effect			
	value				
Mediation effect of Risk tolerance on herding bias	0.16	Moderate mediation effect			
Mediation effect of Risk tolerance on regret aversion bias	0.40	Strong mediation effect			

Table 6 is showing that risk tolerance has strong mediation impact on regret aversion biases but week mediated effect on herding biases.

Table 7:	Goodness	of Fit	of the	model
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Hypothesis	Exogenous Construct	Endogenous construct	Result	F^2	R^2	Q^2
Herding Bias -> Investment Decision	Herding Bias		Supported	0.236		
Regret Aversion Bias ->Investment Decision	Regret AversionBias	Investment Decision	Supported	0.681	45.20%	0.55
Risk Tolerance -> Investment Decision	Risk Tolerance		Supported	0.055		
Herding Bias ->Risk Tolerance	Herding Bias	Risk Tolerance	Supported	0.195	75.60%	0.63
Regret Aversion Bias -> Risk Tolerance	Regret Aversion Bias		Supported	0.023	1010070	0.00

The explanatory power of the model is shown by F square and R square as shown in table 7. R square shows that risk tolerance is strongly explain by herding and regret aversion bias and Investment decision is well explained by risk tolerance, herding and regret aversion bias. F square results shows that herding and regret aversion biases affects risk tolerance weakly. Also the predictive power of the model is strong as shown by Q square.

#### **Conclusion and Limitations**

The conventional framework of finance operates on the premise that investors exhibit rational behaviour and make investment choices predicated on a comprehensive comprehension of market information. However, it is important to acknowledge that achieving consistent rationality in investment decision-making is not a practical expectation for every individual investor. Extensive research in the field of behavioural finance has shed light on the undeniable fact that investors are prone to a multitude of behavioural biases.

The present study collected 410 samples of investors in stock market in India. This is sufficient yet small sample size for the study. Also only retail investors limited biases were shown in this study. Many more biases and factors also affect investment decision. Biases might have different effect on institutional investors, Advisor and analyst behavior. This aspect was not covered in this study.

The broad understanding of the process and investor behaviour in the context of market anomalies necessitates a thorough examination of the psychological dimensions of investing decision-making. When investors acquire a comprehensive comprehension of the various factors that contribute to the phenomenon of irrational decision-making, it is highly probable that they will exhibit a greater propensity to engage in rational investment decisions, as illustrated within the framework of traditional finance. Numerous studies conducted on a global scale have successfully identified the existence of the psychological biases amonginvestors. In consideration of the aforementioned circumstances, the present investigation endeavors to scrutinize the risk tolerance linked to prospect and herding biases and its influence on irrational investment decision within the specific context of India.

#### **Research Implication**

The current study investigates the direct impact that a prospect and herding biases have on the investment decisions of individual investors. As a result, the study has substantial consequences for the investors. In addition, it is essential to be aware that these biases havethe ability to have implications for those who are in charge of policymaking and economic advisory roles because they have the potential to impact decision-making processes. This research report is intended to raise individuals' consciousness of biases, with the end goal ofenabling individuals to make judgments that are influenced by minimum or no biases.

#### References

- 1. Ahmad, M. (2020), "Does underconfidence matter in short-term and long-term investment decisions? Evidence from an emerging market", Management Decision, Vol. 59 No. 3, pp. 692-709.
- 2. Andersen, J.V. (2010), "Detecting anchoring in financial markets", Journal of Behavioral Finance, Vol. 11 No. 2, pp. 129-133.
- 3. Asad, H., Khan, A. and Rafia Faiz, R. (2018), "Behavioral biases across the stock market investors: evidence from Pakistan", Pakistan Economic and Social Review, Vol. 56 No. 1, pp. 185-209.
- 4. Awais, M., Laber, F.M., Rasheed, N. and Khursheed, A. (2016), "Impact of financial literacy and investment experience on risk tolerance and investment decisions: empirical evidence from Pakistan", International Journal of Economics and Financial Issues, Vol. 6 No. 1, pp. 73-79.
- 5. Babajide, A.A. and Adetiloye, K.A. (2012), "Investors' behavioural biases and the security market: an empirical study of the Nigerian security market", Accounting and Finance, Vol. 1 No. 1, pp. 219-229.
- 6. DSE (2020), Dar Es Salaam Stock Exchange Annual Report, Dar es Salaam, Tanzania, available at: https://www.dse.co.tz/content/2020-dse-annual-report.
- Fahim, F., Ali, A., Khan, A.M. and Khan, A.R. (2019), "Impact of overconfidence on investor's investment decision: moderating role of risk perception and religiosity-A survey of Pakistan stock exchange", JISR-MSSE, Vol. 17 No. 2, pp. 85-96.
- 8. Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", Journal of Marketing Research, Vol. 18 No. 1, pp. 39-50, doi: 10.2307/3151312.
- 9. Frijns, B., Koellen, E. and Lehnert, T. (2008), "On the determinants of portfolio choice", Journal of Economic Behavior and Organization, Vol. 66 No. 2, pp. 373-386.
- 10. Grable, J.E. (2008), "Risk tolerance", in Xiao, J.J. (Ed.), Advances in Consumer Financial Behavior Research, Springer, New York, NY, pp. 1-20.

- 11. Grable, J.E. (2016), "Financial risk tolerance", in Xiao, J. (Ed.), Handbook of ConsumerFinance Research, Springer, Cham, pp. 19-31.
- 12. Grable, J.E. and Roszkowski, M.J. (2008), "The influence of mood on the willingness to take financial risks", Journal of Risk Research, Vol. 11 No. 7, pp. 905-923.
- 13. Gustafsson, C. and Omark, L. (2015), "Financial Literacy's Effect on Financial Risk Tolerance", a Degree Project, School of Business and Economics, Umea University, Umea.
- 14. Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. (2006), Multivariate Data Analysis, Pearson Prentice Hall, Upper Saddle River, New Jerssey, NJ, Vol. 6.
- 15. Hvide, H.K. (2002), "Pragmatic beliefs and overconfidence", Journal of Economic Behavior and Organization, Vol. 48 No. 1, pp. 15-28.
- 16. Ishfaq, M., Nazir, M.S., Qamar, M.A.J. and Usman, M. (2020), "Cognitive bias and the extraversion personality shaping the behavior of investors", Frontier in Psychology, Vol. 11 No. 1, pp. 1-11.
- 17. Jaiyeoba, B.H., Abdullah, A.M. and Ibrahim, K. (2020), "Institutional investors vs retail investors: are psychological biases equally applicable to investor divides in Malaysia", International Journal of Bank Marketing, Vol. 38 No. 3, pp. 671-691.
- 18. Jihadi, M. (2018), Financial Literacy, Attitude, Subjective Norms, Perceived Behavior Control and Intention to Invest, Dissertation, Economic and Business Faculty of Airlangga University, Surabaya.
- 19. Jureviciene, D. and Jermakova, K. (2012), "The impact of individuals financial behaviour on investment decisions", Electronic International Interdisciplinary Conference, pp. 242-250, available at: http://www.eiic.cz.
- 20. Kothari, R.C. (2010), Research Methodology: Methods and Techniques, 4th ed., New Age International (P) Publishers, New Delhi.
- 21. Lusardi, A. and Mitchell, O.S. (2014), "The economic importance of financial literacy: theory and evidence", Journal of Economic Literature, Vol. 52 No. 1, pp. 5-44.
- 22. Lusardi, A. and Mitchelli, O.S. (2007), "Financial literacy and retirement preparedness: evidence and implications for financial education", Business Economics, Vol. 42 No. 1, pp. 35-44.
- 23. Mayfield, C., Perdue, G. and Wooten, K. (2008), "Investment management and personality type", Financial Services Review, Vol. 17 No. 3, pp. 219-236.
- 24. Mushinada, C.N.V. (2020), "Are individual investors irrational or adaptive to market dynamics?", Journal of Behavioral and Experimental Finance, Vol. 25 No. 1, pp. 1-8.
- 25. Niazi, S.K.M. and Malik, A.Q. (2019), "Financial attitude and investment decision making moderating role of financial literacy", International Journal of Business and Management, Vol. 14 No. 1, pp. 102-115.
- 26. Ozen, E. and Ersoy, G. (2019), € "The impact of financial literacy on cognitive biases of individual investors", Contemporary Studies in Economic and Financial Analysis, Vol. 101 No. 1, pp. 77-95.
- 27. Pak, O. and Mahmood, M. (2015), "Impact of personality on risk tolerance and investment decisions: a study on potential investors of Kazakhstan", International Journal of Commerce and Management, Vol. 25 No. 4, pp. 370-384.
- Parveen, S., Satti, W.Z., Subhan, A.Q. and Jamil, S. (2020), "Exploring market overreaction, investors' sentiments and investment decisions in an emerging stock market", Borsa Istanbul Review, Vol. 20 No. 3, pp. 224-235.
- 29. Pasewark, W.R. and Riley, M.E. (2010), "It's a matter of principle: the role of personal values in investment decisions", Journal of Business Ethics, Vol. 93, pp. 237-253.
- 30. Peloza, J. (2009), "The challenge of measuring financial impacts from investments in corporate social performance", Journal of Management, Vol. 35 No. 6, pp. 1518-1541, doi: 10.1177/0149206309335188.
- 31. Pompian, M.M. (2011), Behavioral Finance and Wealth Management: How to Build Optimal Portfolios that Account for Investor Biases, John Wiley & Sons, Vol. 667.
- 32. Raheja, S. and Dhiman, B. (2020), "How do emotional intelligence and behavioral biases of investors determine their investment decisions?", Rajagiri Management Journal, Vol. 14 No.1, pp. 35-47.
- 33. Ramalakshmi, V., Pathak, K.V., Jos, M.C. and Baiju, E. (2019), "Impact of cognitive biaseson investment decision making", Journal of Critical Reviews, Vol. 6 No. 6, pp. 59-66.
- 34. Rasool, N. and Ullah, S. (2019), "Financial literacy and behavioural biases of individual investors: empirical evidence of Pakistan stock exchange", Journal of Economics, Finance and Administrative Science, Vol. 25 No. 50, pp. 261-278.
- 35. Reich, C.M. and Berman, J.S. (2015), "Do financial literacy classes help? An experimental assessment in a low-income population", Journal of Social Service Research, Vol. 41 No. 2, pp. 193-203.
- 36. Remund, D.L. (2010), "Financial literacy explicated: the case for a clearer definition in an increasingly complex economy", Journal of Consumer Affairs, Vol. 44 No. 2, pp. 276-295.
- 37. Ritter, J.R. (1988), "The buying and selling behavior of individual investors at the turn of the year", Journal of Finance, Vol. 43 No. 3, pp. 701-717.
- 38. Samsuria, A., Ismiyantib, F. and Narsa, M.I. (2019), "Effects of risk tolerance and financial literacy to investment

intentions", International Journal of Innovation, Creativity and Change, Vol. 10 No. 9, pp. 40-54.

- 39. Sarsted, M., Hair, J.F. Jr, Cheah, J.H., Becker, J.M. and Ringle, C.M. (2019), "How to specify, estimate, and validate higher-order constructs in PLS-SEM", Australasian Marketing Journal, Vol. 27 No. 3, pp. 197-211.
- 40. Senthamizhselvi, A. and Ram, S.V. (2020), "Role of behavioural finance in portfolio selection and investment decision-making", Journal of Critical Reviews, Vol. 7 No. 12, pp. 320-329.
- Shayo, H. (2020), Why Tanzania Stock Market Grows at Slow Pace?, Tanzania Daily News, Dar es Salaam, Tanzania.
  Shukla, A., Rushdi, J.N. and Katiyar, C.R. (2020), "Impact of behavioral biases on investment decisions: a systematic review", International Journal of Management, Vol. 11 No. 4, pp. 68-76.
- 43. Stearns, S.C. (1977), "The evolution of life history traits: a critique of the theory and a review of the data", Annual Review of Ecology, Evolution, and Systematics, Vol. 8 No. 1, pp. 145-171.
- 44. Tversky, A. and Kahneman, D. (1974), "Judgment under uncertainty: heuristics and biases", Science, Vol. 185 No. 4157, pp. 1124-1131.
- 45. Van Rooij, M., Lusardi, A. and Alessie, R. (2011), "Financial literacy and stock market participation", Journal of Financial Economics, Vol. 101 No. 2, pp. 449-472.
- 46. Vlaev, I., Chater, N. and Stewart, N. (2007), "Financial prospect relativity: context effects in financial decisionmaking under risk", Journal of Behavioral Decision Making, Vol. 20 No.3, pp. 273-304.
- 47. Wang, J. and Wang, X. (2019), Structural Equation Modeling: Applications Using Mplus, 2nd ed., Wiley Series in Probability and Statistics, Wiley.
- 48. Waweru, N.M., Munyoki, E. and Uliana, E. (2008), "The effects of behavioural factors in investment decision-making: a survey of institutional investors operating at the Nairobi stock exchange", International Journal of Business Emerging Market, Vol. 1 No. 1, pp. 24-41.