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HOW FINANCIAL LITERACY BUFFERS THE INFLUENCE OF BEHAVIORAL BIASES ON INVESTMENT DECISION MAKING? EVIDENCE FROM AZAD JAMMU AND KASHMIR

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Abstract

This study examines how financial literacy buffers the influence of cognitive biases on investment choices. The respondents included randomly selected 253 Kashmiri investors in Pakistan Stock Exchange. We employed a cross-sectional design while data were collected using a survey questionnaire that measured main variables of the study. Using Process-1 in SPSS, the study demonstrated that anchoring bias alone significantly predicted investment decision explaining 8.7% of the variance. However, confirmation bias did not significantly predict investment decision (β = .114, p = .094). Further, the results revealed that financial literacy buffered the influence of behavioral biases on investment choices. This study also presents implications as well as directions for further research.

Keywords: Confirmation Bias, Anchoring Bias, Financial Literacy, Investment Decision

INTRODUCTION

During the recent years, investment decision-making in the broader field of behavioral finance has acquired substantial attention (Zahera & Bansal, 2018). It has been emerged as a complex cognitive process which is largely shaped by economic assessments as well as by cognitive tendencies (Zafar & Siddiqui, 2020). It largely affects an individual's perceptions, interpretations, and response towards financial information (Mittal, 2022). As an emerging paradigm, behavioral finance substantiate how use of behavioral biased adversely affect investment decisions by trapping the investors in systematic deviations from rationality. Literature has identified an array of behavioral biases such as anchoring bias and confirmation bias that are highly influential in impeding rational financial decision-making (Parveen, Satti, Subhan, Riaz, Baber, & Bashir, 2023; Zahera & Bansal, 2018). The presence of these biases is more pronounced in under-researched and culturally distinct regions such as Azad Jammu and Kashmir (AJK), where investor education, financial exposure, and access to credible financial information remain comparatively limited (Mahmood, 2017).

Anchoring bias is defined as the inclination of an investor to focus on the first piece of information they encounter to make subsequent financial decisions (Owusu & Laryea, 2023). This bias is strong enough that regardless of the availability of more accurate information, anchored investors tend to insufficiently adjust their expectations (Li, Tiwari, & Tong, 2017), resulting in mispricing, delayed reactions, and suboptimal portfolio choices (Madaan & Singh, 2019). The investors in Azad Jammu and Kashmir, for example, may largely rely on stock's historical peak value regardless of the despite recent market downturns or revised earnings reports (Sohail & Javid, 2014). These anchors may result in outdated financial beliefs thereby impairing the adaptability required in a dynamically fluctuating investment environment (Kengatharan & Kengatharan, 2014).

Confirmation bias causes people to look for, understand, and remember data that supports their existing views while ignoring data that challenges them. It is one of the crucial predictor investment choices of the investors (Ali & Rehman, 2013). Empirical evidences demonstrate that investors inclined to this bias try to seek the information that supports their investment choices. Further, they tend to connect with individuals possessing similar views regarding their investment decisions (Almansour, Elkrghli, & Almansour, 2023). In the collectivist culture of AJK characterized by closely knit social structures; investors tend to rely on confirmation bias while making their investment choice (Khuharo, Ayub, & Ali, 2025) Consequently, relying on confirmation bias make investors confident in bad choices, thereby leading them to less likely rebalance their portfolio (Holzmeister, Huber, Kirchler, Lindner, Weitzel, & Zeisberger, 2020). Confirmation bias thus make the investors make them least responsive to financial disclosures and commit consistent investment errors.

Evidences suggest that due to limited financial knowledge, structural obstacles and limited access to high-quality financial advisory services; investors in AJK have become vulnerable to these biases (Ahmad, Majeed, Khan, Sohaib, & Shehzad, 2021). Limited capacity of investors in analyzing financial data and differentiating legitimate information from speculative noise cause detrimental effect on investment decisions of the investors (Malik, Iftikhar, Ayub, & Ellahi, 2022). Hence, financial knowledge may serves as a buffer against the detrimental effects of anchoring and confirmation biases on investment decisions (Khuharo, Ayub, & Ali, 2025; Adel, 2024). Investors possessing higher knowledge of financial markets make more rational financial decisions. Their analytical ability helps them curtail reliance on confirmation and anchoring biases (Hidayat-ur-Rehman, 2025).

Financial literacy has increasingly become important in AJK due to growing participation in digital investing and financial markets (Showkat, Nagina, Baba, & Yahya, 2025). However, there are still a large number of investors who on informal sources of financial information lacking authenticity which leads to unstable investment patterns and market inefficiencies. Hence, it is safe to argue that financial literacy as moderating pathway has become crucial as it helps individuals recognize biases and make rational financial decisions.

Despite a substantial body of research on behavioral biases within Pakistani context, there is still a research gap in the existing body of knowledge on behavioral finance (Munir, Chishti, & Bashir, 2024). Hence, there is a dire need to understand how anchoring and confirmation biases affect investment decisions due to the region's strong communal ties and low financial literacy. Further, the buffering role of financial literacy can also provides valuable insights for policymakers, financial institutions, and investor education programs.

From the theoretical standpoint, examination of investment decision-making in emerging regional contexts like Azad Jammu and Kashmir through the lens of Prospect Theory is still limited. Prospect Theory explains how individuals make decisions under risk by evaluating potential gains and losses relative to a reference point rather than in absolute terms. Particularly, the role of financial literacy in reshaping biased judgments is still underexplored requiring integration of Prospect Theory with financial literacy to explain investment decision-making in low-literacy, under-researched environments.

This study bridges this gap by examining how financial literacy buffers the influence of behavioral on investment decision-making among investors in Azad Jammu and Kashmir. Our study emphasized on two significant cognitive biases i.e. anchoring bias and confirmation bias while accounting financial literacy as a buffer this relationship. This approach seeks to enhance current discussions in behavioral finance and to support the development of targeted financial literacy initiatives to improve investment outcomes in AJK's evolving economic environment.

Literature Review and Hypotheses Development

Confirmation Bias and Investment Decision

Prospect Theory suggests investors tend to avoid risk and make use of selective information while making investment decisions under uncertainty (Kahneman & Tversky, 1984). Empirical evidences demonstrate that investors prefer information that supports their existing beliefs while neglecting contradictory evidence during their investment choices (Almansour, Elkrghli, & Almansour, 2023). This selective attention refers to confirmation bias that promotes unwarranted confidence in subjective reference points leading them to neglect perception of potential losses (Malik, Iftikhar, Ayub, & Ellahi, 2022). Confirmation bias has become prevalent among the AJK's investors due to their reliance on information generated through interpersonal communication, local networks, and informal sources. They tend to neglect the risk signals by validating their initial choices by consuming confirming information (Combrink & Lew, 2020). From the lens of Prospect Theory asserts, investors deviate from rational financial behavior due to these biased evaluations of potential gains and losses. Hence, confirmation bias shapes investment choices of the investors by influencing their ability of interpret market information and assess risk. Based on these arguments, it is hypothesized;

H1: Confirmation bias has a significant impact on investors' investment decisions.

Anchoring Bias and Investment Decision

The study draws upon the assumptions of the Prospect Theory (Kahneman & Tversky, 1979) which posits that individuals rely on heuristics/biases instead of rational choice models while making financial decisions (Owusu & Laryea, 2023). Empirical evidences suggest that investors with limited financial literacy fixate on an initial value or reference point such as historical prices, initial information about a stock, or market rumors while making financial choices (Malik, Iftikhar, Ayub, & Ellahi, 2022; Madaan & Singh, 2019). Investors in Azad Jammu and Kashmir (AJK) rely on easily accessible anchor points as they have limited access to advanced analytical tools and professional financial advice (Ahmed, Rasool, Saleem, Khan, & Kanwal, 2022). Consequently, their investment choices are affected as they tend to insufficiently adjust their beliefs even in the presence of new market signals (Hasan & Mustafa, 2023). Drawing upon Prospect Theory, as financial decisions are reference-dependent, anchoring bias can significantly shape investors' value perceptions and investment decisions.

H2: Anchoring bias has a significant impact on investors' investment decisions.

Financial Literacy as Moderator

Kahneman & Tversky (1979) in their Prospect Theory asserted that human rationality is bounded and decision made under uncertainty are based on certain cognitive shortcuts/heuristics. However, strength of these biases may be determined by the information-processing competence and analytical capability of individual (Riaz & Hunjra, 2015). One of these capabilities may include financial literacy of an individual that can curtail the influence of confirmation bias by elevating an investor's capacity to evaluate a broader range of information sources while making financial decisions. Drawing upon Prospect Theory, individual lacking financial knowledge tend to rely on selective information processing and loss-averse behavior. Contrary to it, a financially literate investor scrutinizes self-confirming beliefs, assess market signals objectively, and make investment decisions based on comprehensive rather than selective information. In the context of AJK, enhancing financial literacy enables investors to navigate information asymmetry and avoid overconfidence rooted in confirmation bias. Thus, financial literacy is expected to temper the negative effect of confirmation bias by promoting balanced evaluation and rational portfolio decisions.

H3: Financial literacy moderates the relationship between confirmation bias and investment decision, such that the relationship weakens at higher levels of financial literacy

Further, financial literacy can also serve as buffer against the influence of anchoring bias on investment decision (Adel, 2024). Investors possessing elevated financial knowledge can critically appraise anchoring cues and re-evaluate decisions based on updated data and fundamental analysis. Since investors in AJK possessing limited exposure to formal

finance largely rely on anchor points, financial literacy helps them make rational choices instead of relying on outdated anchors. Further, their financial literacy help them respond appropriately to new market information. Based on the assumptions of Prospect Theory and aforementioned arguments, it is hypothesized;

H4: Financial literacy moderates the relationship between anchoring bias and investment decision, such that the relationship weakens at higher levels of financial literacy.

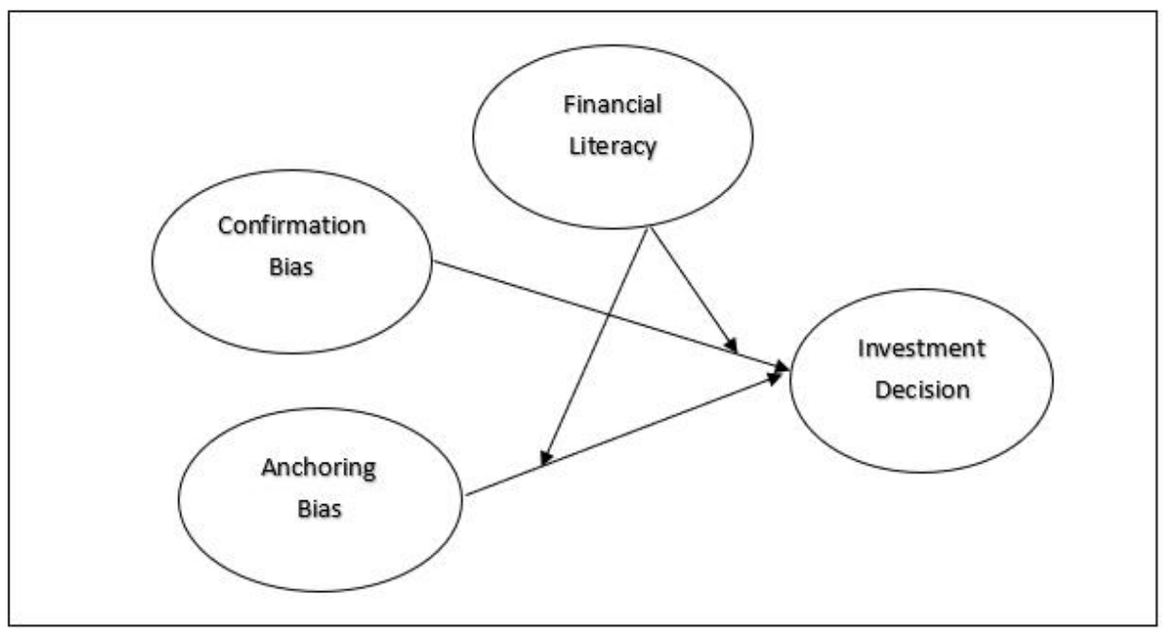

Figure 1: Conceptual Model

Method

Research Design: The study was causal explanatory that measured the direct and moderated effect of behavioral biased and financial literacy on investment decision. We employed a cross-sectional design to undertake this study by collecting data only once from the respondents.

Participants: Participants of this study included 217 randomly selected investors of Pakistan Stock Exchange (PSX). The inclusion criterion for recruitment of investors was their Kashmiri orientation trading in PSX. The exclusion criteria included all the investors of PSX other than Kashmir.

Instrument: Data were collected from the respondents of the study using a survey questionnaire that measured the demographics and major variables of the study. The responses were anchored on a five point Likert type rating scale ranging from strongly agree (5) to strongly disagree (1).

Financial literacy was measured using 6 items scale developed by Ahmad & Shah (2022).. Similarly, ***Confirmation bias*** and ***anchoring bias*** were measured using 4 items of each scale developed by Mardiana et al. (2025). ***Investment decision*** was measured using 3 items scale developed by Waweru et al. (2008).

Results

It is evident at table 1 that male constituted the major part of the sample (63.3%) while females were half of them (38.7%) demonstrating that females had lesser representation of the Kashmiri investors in PSX. Further, results demonstrate that all the age groups represented that sample ranging from 20.2% (20-30 years) to 29.2% (Above 50 years). The analysis of the qualification of the respondents revealed that major part of the sample acquired graduation (48.6%) and post-graduation (24.1%) while 27.3% of them acquired 10-12 years of schooling demonstrating the sample was comprised qualified and educated individuals. Finally, the results revealed that 46.6% of the respondents possessed 1-5 years of experience, 34% of them possessed 6-10 years of experience while 18.4% of them possessed more than 10 years of experience in stock market.

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Table 1: Demographics of the Respondents

Demographics		Frequency	Percent	Cumulative Percent
Gender	Male	155	61.3	61.3
	Female	98	38.7	100.0
	Total	253	100.0	
Age	20-30	51	20.2	20.2
	31-40	71	28.1	48.3
	41-50	57	22.5	70.8
	Above 50	74	29.2	100.0
	Total	253	100.0	
Experience	1-5 Years	118	46.6	46.6
	6-10 Years	86	34.0	80.6
	More than 15 Years	49	18.4	100.0
	Total	253	100.0	
Qualification	10-12 Years of Education	69	27.3	27.3
	14 Years of Education	123	48.6	75.9
	16 Years or Above of Education	61	24.1	100.0
	Total	253	100.0	

Confirmatory Factor Analysis

We performed confirmatory factor analysis using AMOS 26. The results at Figure 2 and Table 2 demonstrate that all the items are appropriately associated with their respective constructs. Further, these results provide evidence of convergent validity, as all constructs demonstrated adequately high standardized factor loadings on their intended latent variables.

Table 2: Factor Loadings, Alpha Reliability, CR and AVE

Constructs	Items	Loading	Cronbach's Alpha	CR	AVE
Anchoring Bias	AB1	.864	0.95	0.94	0.78
(4×items)	AB2	.866			
	AB3	.915			
	AB4	.894			
Confirmation Bias	CB1	.920	0.96	0.95	0.84
(4×items)	CB2	.908			
	CB3	.941			
	CB4	.893			
Financial Literacy	FL1	.950	0.95	0.95	0.77
(6×items)	FL2	.861			

	FL3	.864			
	FL4	.887			
	FL5	.764			
Investment Decision	FL6	.934	0.63	0.81	0.59
(3×items)	ID1	.613			
	ID2	.834			
	ID3	.830			

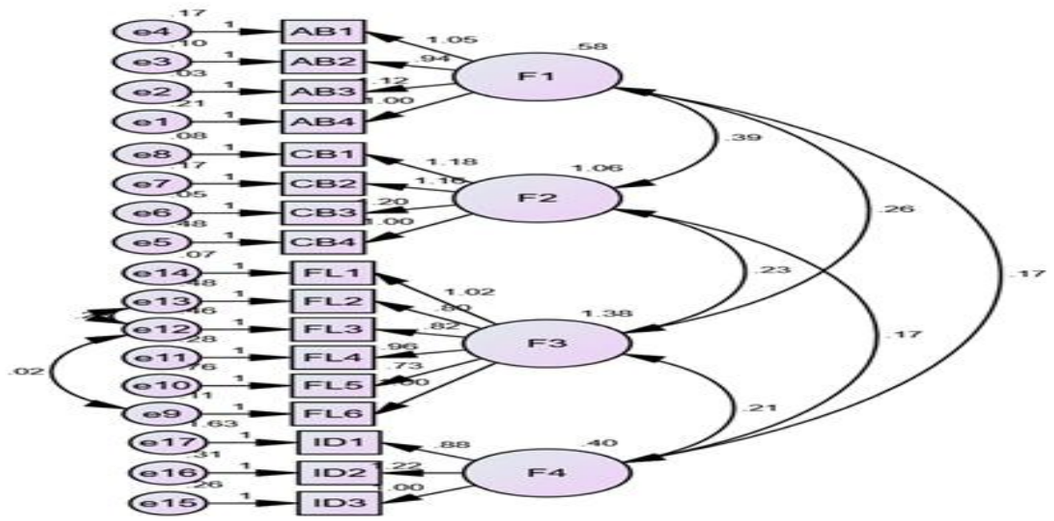

Figure 2: Factor Loading

Model Fitness

Table 3 below demonstrates an overall good fit, as evidences by acceptable CMIN/df = 2.023 and strong incremental fit indices (CFI=0.91, TLI=0.97, GFI=0.97). The RMSEA= 0.05 is well within recommended limits, confirming that the hypothesized measurement model fits the data adequately.

Table 3: Model Fit Indices

Model	Chi-Square	DF	CMIN/df	GFI	TLI	CFI	RMSEA
Default Model	224.571	111	2.023**	0.91	0.97	0.97	0.05

Regression Analysis

We performed step-wise regression analysis to examine the direct effect of confirmation bias and anchoring bias in investment decision making. Table 4 shows that anchoring bias at model 1 alone significantly predicted ID, $\beta = .29$, $t = 4.893$, $p < .001$, explaining 8.7% of the variance. However, confirmation bias at model 2 did not significantly predict ID when entered simultaneously with AB in the regression model ($\beta = .114$, $p = .094$).

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Table 4: Step-Wise Regression Analysis

Model	Predictor	B	SE B	β	t	p	R^2	ΔR^2	F	df	Sig. F Change
1	Constant	2.68	0.26	—	10.341	0.00	0.087	0.087	23.943	1, 251	0
	AB	0.30	0.06	0.29	4.893	0.00					
2	Constant	2.58	0.27	—	9.744	0.00	0.097	0.01	13.469	2, 250	0.094
	AB	0.25	0.07	0.24	3.559	0.00					
	CB	0.08	0.05	0.15	1.68	0.094					

Financial Literacy as Moderator of Anchoring Bias and Investment Decision

We performed a moderation analysis using PROCESS Model 1 to examine the moderating role of financial literacy in relationship of anchoring bias and investment decision. The results revealed that investment decision was significantly predicted by the model $F(3, 249) = 13.80$, $p < .001$, explaining 14.3% of the variance. Both the anchoring bias ($b = 0.72$, $p < .001$) and financial literacy ($b = 0.71$, $p = .001$) were significant predictors of ID. Further, the interaction of both FL and AB was also significant ($b = -0.14$, $p = .008$), demonstrating that FL moderates the relationship between AB and ID.

A step further, we examined the predictive ability of AB for ID at different levels using simple slopes analysis. The results depicted that ID was significantly predicted by AB at low FL ($b = 0.39$, $p < .001$) and medium FL ($b = 0.16$, $p = .028$), but the effect became non-significant at high FL ($b = 0.01$, $p = .898$). This pattern suggests that the positive effect of AB on ID weakens as FL increases, demonstrating a buffering (dampening) moderation effect.

Table 5: Financial Literacy as Moderator of Anchoring Bias and Investment Decision

Predictor / Effect	B	SE	T	p	95% CI (LL, UL)
Main Effects					
AB	0.72	0.19	3.75	< .001	0.34, 1.10
FL	0.71	0.22	3.23	0.001	0.28, 1.15
Interaction					
AB × FL	–0.14	0.05	–2.65	0.008	–0.25, –0.04
Conditional Effects of AB on ID					
Low FL (2.33)	0.39	0.09	4.6	< .001	0.22, 0.56
Medium FL (4.00)	0.16	0.07	2.21	0.028	0.02, 0.29
High FL (5.00)	0.01	0.11	0.13	0.898	–0.20, 0.22

Financial Literacy as Moderator of Confirmation Bias and Investment Decision

The buffering role of financial knowledge in the interplay of confirmation bias and investment decision was examined by conducting a moderation analysis using PROCESS Model 1. Table 6 shows that the overall model was significant, $F(3, 249) = 10.92$, $p < .001$, explaining 11.6% of the variance in ID. CB significantly predicted ID ($b = 0.37$, $p = .003$), as did FL ($b = 0.44$, $p = .002$). The interaction term (CB × FL) was significant ($b = –0.07$, $p = .038$), indicating a moderation effect.

Simple slopes analysis showed that CB positively predicted ID at low FL ($b = 0.21$, $p < .001$) and medium FL ($b = 0.10$, $p = .033$), but the effect was nonsignificant at high FL ($b = 0.03$, $p = .682$). This suggests that the influence of CB on ID weakens as FL increases, indicating a diminishing effect of CB on ID at higher levels of the moderator.

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Table 6: Financial Literacy as Moderator of Confirmation Bias and Investment Decision

Predictor / Effect	B	SE	T	p	95% CI (LL, UL)
Main Effects					
CB	0.37	0.12	2.98	0.003	0.13, 0.62
FL	0.44	0.14	3.2	0.002	0.17, 0.72
Interaction					
CB × FL	–0.07	0.03	–2.08	0.038	–0.13, –0.00
Conditional Effects of CB on ID					
Low FL (2.33)	0.21	0.06	3.62	< .001	0.10, 0.32
Medium FL (4.00)	0.1	0.04	2.14	0.033	0.01, 0.18
High FL (5.00)	0.03	0.06	0.41	0.682	–0.10, 0.15

Discussion on Results

This section presents a discussion on the results of our study in the light of previous studies with the aim of determining whether AB and CB affect ID, and whether FL moderates these relationships. Results of stepwise regression results confirmed that anchoring bias is a significant predictor of investment decision both independently ($\beta = .295$, $p < .001$) and after accounting for confirmation bias ($\beta = .242$, $p < .001$) supporting the 2nd hypothesis of the study. Consistent with Tversky and Kahneman (1984), this study demonstrated that investors tend to rely excessively on initial reference points when forming financial judgments, even when more objective data are available.

Further, our study reported that confirmation bias failed to significantly predict investment decision making when anchoring bias was included in the model ($\beta = .114$, $p = .094$) rejecting the 2nd hypothesis of the study. Our results substantiate the findings of Park et al., (2013) that depict that confirmation bias alone can hardly affect the investment choices. More recent studies (Hasan & Mustafa, 2023) demonstrate that affective heuristics often dominate cognitive filters in high-uncertainty environments such as financial markets, which may explain the overshadowing of confirmation bias anchoring bias in this study.

We further found support for our results that financial knowledge buffers the influence of confirmation bias on investment decision ($b = –0.07$, $p = .038$) such that at low and medium levels of financial literacy, investment decisions are significantly affected by confirmation bias. However, the effect becomes insignificant at high level of financial literacy. We found support for the results from the existing studies (Bhandari & Deaves, 2006) that suggest that literacy equips investors with analytical skills that counteract cognitive distortions.

Our study demonstrated that relationship of anchoring bias and investment decision was moderated by financial literacy supporting the 4th hypothesis of the study ($b = –0.14$, $p = .008$). Further, results revealed that effect of anchoring bias on investment decision was strongest among the investors when financial literacy was low while the effect diminished to non-significance when financial literacy was high. We found support for these results from the existing studies (Lusardi & Mitchell, 2014; van Rooij et al., 2011) that demonstrated that financial literacy mitigates the effect of behavioral biases on investment choices. These studies suggest that FL makes the investors cautious while evaluating reference information and less susceptible to anchoring traps.

Conclusion

The study demonstrates that investment decision making of the investors is largely influenced by the cognitive and affective biases, with affective bias emerging as the strongest direct predictor. Despite the weaker independent effect of anchoring bias on investment decision making, the findings of this study suggest that financial literacy buffers the effect of both biases on investment choices. These results further demonstrate that financial literacy is a significant buffer against bias-driven decision errors. Knowledge of financing and financial decision making can help investors to effective mitigate emotional impulses and cognitive distortions thereby signifying the protective role of knowledge in improving financial judgment. We thus argue that financial literacy is imperative for promoting rational decision-making, mitigating behavioral biases, and strengthening investment quality in emerging financial markets.

Implications

The findings contribute to theory by demonstrating how the proposed constructs interact within the tested model, offering empirical support for their hypothesized relationships. The acceptable model-fit indices strengthen the theoretical framework, indicating that the underlying assumptions, pathways, and conceptual structure meaningfully capture real-world behavioral patterns.

The validated model provides actionable insights for practitioners by highlighting which factors most strongly shape outcomes in applied settings. These results can guide policymakers, administrators, and organizational leaders in designing interventions, training programs, and management strategies consistent with the model's significant pathways.

Limitations and Future Research Directions

Despite strong model fit, cross-sectional design may restrict causal claims of the study. Future studies could employ longitudinal designs, diverse populations, and additional moderating or mediating variables to enhance generalizability and refine the model for broader theoretical and practical use. Another limitation of this study is use of self-report measures that can cause response bias and may result in generalizability issue. Future studies may employ performance measure to address this issue of generalizability. This study used financial literacy as buffer against the influence of behavioral biases on investment decision making. Future researchers may examine other moderators such as risk tolerance, herding tendency, and cognitive reflection.

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