



Emotional Finance, Financial Literacy, and Investment Decisions: Evidence from the Pakistan Stock Exchange

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ABSTRACT

While financial theory assumes rational markets, behavioral finance suggests that investment decisions are often driven by emotions, particularly during periods of macro-financial uncertainty. This study investigates whether financial literacy moderates the relationship between emotional finance and individual investment decisions at the Pakistan Stock Exchange (PSX), Karachi. Emotional finance is measured through four established behavioral biases: overconfidence, the disposition effect, herding, and risk aversion. The findings reveal that emotional finance has a significant negative effect on investment decisions ($\beta = -0.29$, $p < 0.001$), whereas financial literacy significantly weakens this adverse relationship by reducing behavioral biases and improving decision quality. The analysis is contextualized within the April 2025 KSE-100 market sell-off triggered by a global tariff shock, providing real-world evidence of how external policy shocks amplify investor biases in a retail-dominated emerging market. This study contributes to the emerging-market behavioral finance literature by being the first PSX study to integrate all four dimensions of emotional finance within a single PLS-SEM framework. It concludes with theoretical, methodological, and policy implications, highlighting the importance of financial literacy initiatives by the SECP and PSX and recommending longitudinal, cross-market, and AI-based research to further advance the field.

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INTRODUCTION

The stock market can be seen as an instrument for measuring optimism and expectation: when it rises, things are good; when it falls, things are bad. History, however, has repeatedly shown that market breaks are more psychological than accounting events. This cycle recurs throughout financial history, from the Dutch tulip mania of the 17th century, to the South Sea Bubble of the 18th, through the Wall Street crash of 1929 and the 2008 financial crisis that shook the planet, and is triggered more by crowd psychology, herding, and overconfidence than by fundamentals (Kindleberger & Aliber, 2011). This recurring pattern laid the foundation for behavioural finance, and its newer offshoot, emotional finance; both premised on the idea that markets are populated by human beings who do not respond with equal sensitivity to gains and losses, or to uncertainty and doubt (Barberis & Thaler, 2003; Kahneman & Tversky, 1979).

This dynamic has played out vividly within the past year alone. On 2 April 2025, since termed "Liberation Day" by the United States administration; a sweeping package of reciprocal tariffs was announced, triggering the world's largest equity sell-off since the COVID-19 crash of 2020. Over the following days, the S&P 500 dropped by nearly ten per cent, wiping out more than USD 6.6 trillion in market capitalisation within two trading sessions, while the CBOE Volatility Index (VIX) surged to its highest close since April 2020 (Vantage Markets, 2026). The contagion spread immediately and globally: China's CSI 300 fell by over 7 per cent, Japan's Nikkei 225 lost 7 to 8 per cent intraday, and European indices suffered their heaviest one-day losses in years. Pakistan was not insulated from this shock. Following the imposition of a new 29 per cent US tariff on Pakistani exports, the KSE-100 index at the PSX fell by more than 5 per cent on 7 April 2025, triggering a maximum circuit breaker and a temporary trading halt before recovering slightly by close. Just weeks later, in May 2025, the KSE-100 swung in the opposite direction, posting its sharpest single-day gain in over two decades, a rise exceeding nine per cent, driven by an IMF disbursement and the India-Pakistan ceasefire. Such extreme and rapid movements sit uneasily with conventional market fundamentals, and are far better explained through the lens of emotional finance: a framework in which exogenous events can exert a disproportionate influence on prices as fear, herding, overconfidence, and loss aversion shape investor behaviour.

The Pakistani market, in fact, offers a longer-running illustration of this same theme. The Karachi Stock Exchange (KSE), established in 1947 and unified with the Lahore and Islamabad exchanges in 2016 to form the Pakistan Stock Exchange (PSX), has witnessed several episodes in which investor losses stemmed not from economic fundamentals but from speculative excess, weak investor protection, and collective panic, most notably in 2005 and 2008; both episodes were followed by reforms to investor protection and trading mechanisms (PSX, 2026). Taken together with the events of April–May 2025, this history motivates the central question of this study: what role do investor emotions, overconfidence, the disposition effect, herd behavior, and risk aversion, play in shaping investment decisions, and can financial knowledge act as a cognitive safeguard to these impacts?

Financial literacy has accordingly moved to the forefront of policy attention. The SECP and PSX have collaborated on a Financial Literacy Plan aimed at raising public awareness of financial education, risk mitigation, and regulatory protections, complemented by a growing number of privately sponsored financial-education events, including the 2026 Money Matters Wealth Expo. Survey evidence, however, points to a persistent gap between these efforts and investor behavior on the ground: Pakistani retail investors continue to rely heavily on unreliable foundations of info, rumors, social links, unverified tips, and tend to defer to the actions of peers rather than conduct independent analysis. This pattern is consistent with the broader literature linking low financial literacy to heightened susceptibility to behavioral bias (Money Matters Wealth Expo, 2026; Rasool & Ullah, 2020; Malik et al., 2026).

PROBLEM STATEMENT

In spite of quantity and availability of investment opportunities and financial products offered to the common man in Pakistan, Financial education, when interpreted through knowledge, skills, and confidence and as the willingness to make sound financial decisions, is scarce, even amongst the active participants in the financial market. According to existing statistics and estimates, only approximately one-third of the adult population in the world is financially literate (Klapper et al., 2015; Lusardi & Mitchell, 2014) and evidence collected from studies specifically carried out on PSX indicates that financial literacy in Pakistan is lower, especially in the rural areas. Concurrently, studies show that combined with the traits and behaviors of people around

them, investors (including in Pakistan) exhibit overconfidence, loss aversion, and herd and disposition effects, especially. This study deals with one of few studies examining these emotional finance dimensions not examined separately, and whether these modifications have any effect on the overall impact of the various mentioned emotional finance dimensions on finance-related decisions among PSX investors.

RESEARCH OBJECTIVES

The research objectives of this study are:

- (i) To examine the impact of emotional finance (overconfidence, disposition, herding, risk aversion) on the investment decision of individual investors at the PSX; and
- (ii) To examine the role of moderate financial literacy in the emotional finance and investment decision of individual investors at the PSX.

SIGNIFICANCE AND SCOPE

The study has three levels of contribution. It provides a theoretically based test of the combined effect of the four constructs of emotional finance in one confirmative measurement and structural model that would combine the content of behavioral finance theory with the content of prospect theory. From a literature available, survey-based evidence from PSX Karachi investors that have surfaced over a period of several years studied in isolation and, as documented below, experience a fast growth rate from 2025 to 2026. In practical terms the findings have direct implications on how investor-education programs run by the SECP, PSX, brokerage houses and educational institutions are designed, and are particularly relevant against the backdrop of investor sentiment in recent times having proven to be fragile in the face of any external shocks like the current 2025 tariff war.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Emotional Finance and Investment Decisions

Emotions and the Law of Attraction Emotional finance is the term used to denote the role played by emotions in addition to, or, else, calculation in financial decision-making (Zaleskiewicz & Traczyk, 2020). It draws on key insights from prospect theory that people assess gains and losses differently, and assign a higher value to losses compared to the corresponding gain (Kahneman &

Tversky, 1979), and it rejects the basic tenets of conventional finance (Ackert, 2014), which assumes that investors assess the value of both returns on investment and assets in a symmetrical fashion. There is a large empirical body that has found a link between emotional finance and sub-optimal investment: negative affect increases confidence in risky investments by making investors underestimate the risk, and overestimate the chance of a negative outcome and this impact is stronger on younger and less experienced investors (Hirshleifer et al., 2012, Gervais & Odean, 2001). Research in developing markets indicates that mental accounting, loss aversion, and overconfidence reduce investment efficiency, specifically when information is of a high quality and is difficult to obtain (Elhussein et al., 2020; Sari et al., 2022; Metawa et al., 2019).

Overconfidence

The overconfidence bias stems from investors' overestimation of their forecasting skill, excessive trading and ignoring disconfirming information (Gervais & Odean, 2001; Metawa et al., 2019). Specifically, on PSX, Malik et al. (2024) concluded that overconfidence works in part through investors' level of risk tolerance such that overconfident investors face a higher level of risk than they are warranted by their information set. Similar results are found in the United States where overconfidence was found to be associated with more trading during the period of COVID-19 (Bouteska et al., 2023), in the G7 markets where overconfidence was shown to fuel investor trading with market liquidity around the pandemic (Rabbani et al., 2024), and in India where the magnitude of one's investment was found to be more based on overconfidence than other factors (Upashi & Kadakol, 2023; Wachasundar & Gidwani, 2024).

The loss aversion of investors leads them to sell winning stocks too quickly and losing stocks too slowly. This phenomenon is called the disposition effect, and was introduced by Shefrin and Statman (1985). This reluctance to settle losses leads to market inefficiency because, and this is what Liu et al. (2023) state, settlements take too long to be realized and so capital is not reallocated to more productive endeavors is not as strong for institutional investors, as Varan (2008) shows in the context of the Istanbul Stock Exchange and Grinblatt and Han (2005) demonstrate in the context of the United States: professional, fundamentals-oriented investment managers exhibit significantly less disposition effect than do individual investors; Trejos et al.

(2019) find a connection between the disposition effect and overconfidence; finally, Arora and Madhumathi (2023) find that the disposition effect becomes stronger when market conditions are unstable, as occurred in India.

Herding

In fact, herding is particularly pronounced in the creation of asset bubbles as well as during asset crashes (Hirshleifer and Teoh, 2020), and it has been associated with mispricing and excess volatility (Sias, 2004; Wermers, 1999). This is particularly true of investors who are financially illiterate, as they replace their own judgment with social validation (Kallinterakis et al., 2009). Studies on Pakistani investors conclude that herding is associated to information cascades in investors with less analytical capacity (Ullah & Kakakhel, 2020), and studies on financial literacy and its association with herd behavior in Indian investors show that financial education specifically is effective at curbing the herd behavior (Mushinada & Veluri, 2019). It also exemplifies its context dependency through the institutional and structural amplifiers, such as oil-price and religious/cultural determinants in the case of Saudi Arabian Islamic stocks (Yafouz & Yet, 2023) and in the case of Malaysian Islamic stocks (Ah Mand et al., 2023).

Risk Aversion

In general, risk-averse investors systematically choose safer assets, but during bull markets they do so, in part, at the expense of missed returns (Baker et al., 2021); and when uncertainty prevails, these investors actively seek out the safer investments in what is often characterized as a “flight to quality” (Guiso et al., 2022). Díaz and Esparcia (2019) demonstrate that risk aversion is not constant and stable in time, but is procyclical and volatile, peaking during economic downturns, which was clearly observed in the 2025 currency sell-off driven by tariffs the VIX climbed, and safe-haven currencies rose as stocks fell (Vantage Markets, 2026). In Pakistan, Mumtaz et al. (2021) discover risk aversion as the most powerful influencer on investment decision for PSX shareholders, and in the Indian domain, this paper explores the bond market and personality traits, respectively, through the work of Geetha et al. (2023) and Lathief et al. (2024).

Financial Literacy Moderator

As a moderating variable, financial literacy is considered in a growing body of research on emotional finance and investment behavior. Takeda et al. (2013) and Rasool and Ullah (2020) confirm that financially educated investors have a better probability to deal with loss-based anxiety and keep away from panic selling. Shehata et al. (2021) find that perceived risk has significant negative moderating effect between financial literacy and investment in the context of Saudi Arabia, while Yanti and Endri (2024) use the context of Indonesia and find that the impact of overconfidence and perceived risk on investment can be moderated.

This literature has grown exponentially in 2025–2026, with significant number of research journals dealing with only Pakistan. In investigating the Palestine Stock Exchange, Darwish (2025) reported that the invalidating effect of overconfidence does not weaken the relationship between financial-literacy and investment-decision, highlighting that the moderating effect of financial-literacy does not hold true for all types of biases. Using PLS-SEM, Reddy et al. (2026) studied the stock exchange in India (BSE and NSE), and concluded that the effect of investment decisions on emotional factors and market impact of investors is mediated by financial literacy, although not by heuristics or herding, but the formation mechanism of both has not been explained. Reddy et al. (2026) did a study on Indian BSE and NSE, using PLS-SEM, and found that financial literacy moderated the effect of investing base on emotional factors and the market impact of investors, but not the effect of heuristics and herding; however, the formation mechanism of both has not been explained. Most relevant to the current study, Malik et al. (2026) model behavioral biases, risk perception and financial literacy together in 280 PSX retail investors using PLS-SEM and find that financial literacy has a significant, though small ($f^2 = 0.133$), moderating role between the relationship of behavioral biases and decisions, with an emphasis on the fact that the role of financial literacy has been “overlooked” in previous studies of financial literacy and PSX investors. The aggregate evidence suggests that financial-literacy moderation research remains relevant and still in a nascent state to date, an issue that is resolved in the present study by means of a complementary methodological approach which is explained in Section 3.

Emerging Analytical Frontiers: Artificial Intelligence in Behavioral Finance

There is a new, but complementary, body of literature that uses ML and AI to detect and predict investor bias. The application of natural language processing (NLP), explainable AI (XAI),

and clustering algorithms to detect trading record mark-ups on overconfidence, herding and loss aversion from news sentiment and social media (SM) activity is recorded in recent reviews (Khomane & Bhinge, 2025; SN Business & Economics, 2025). New systems on robo-advisories applications employ these methods to catch behavioral drifts as soon as they happen, and to create behavioral “nudges” to mitigate them. Of course, such practices are not part of the present survey-based design, but an important complementary research field for future PSX is worth mentioning: further investigation is needed on different PSX practices beyond the scope of this presentation.

Theoretical Support

The current study is based on two theories. Behavioral Finance Theory states that assumptions the investor is a purely rational information processor are incorrect and that the mind uses certain "heuristics" or thought-process shortcuts that flaws judgment (Tversky & Kahneman, 1974). The more specific mechanism is the one provided by Expect Utility Theory, Prospect theory (Kahneman & Tversky, 1979): Investors assess benefits based on their reference point, losses are weighted approximately twice as heavily as gains, and they are prone to psychological accounting, framing effects and aversion to risk or uncertainty. Both theories converge on the predictions they tested here, that overconfidence, disposition, herding, and risk aversion will each have a measurable and negative effect on the quality of investment decision, and that financial literacy (increases investors' ability to process information deliberately and analytically) should dampen these effects.

RESEARCH GAP AND CONTRIBUTION

This area remains unexplored and it leaves a gap in the existing literature. This study is driven by three gaps that are illustrated. Second, most of the literature on PSX focused on the single PSX bias (e.g. bias of overconfidence or herding bias) while failing to jointly model the effects of several emotional finance dimensions, which can result in the exaggeration of the power of any one of these biases and consequently in the underestimation of the effects of the emotional finance component as a whole. Second, studies like those of Darwish (2025), Reddy et al. (2026) and Malik et al. (2026), including the most recent published study on the PSX, have started to explore this moderating effect with financial literacy present in emerging markets, but most of these works are based on PLS-SEM and use online, purposive samples that explicitly excluded

Karachi, which is the primary trading hub and majority of the smart and active retail accounts of the PSX. In the present study, the sample is handpicked from the investors of Karachi and the evidence in the form of CB-SEM is complementary to PLS-SEM that allows a proper argues about the overall model fit in terms of CFI, TLI, RMSEA. Third, no previous PSX study places its results in the context of the actual real-time behavioral evidence generated by the tariff shock of April 2025 and the spur-of-the-moment rebound of May 2025, which provide an across-the-national-market natural study of emotions in finance. The study embraces a four-dimensional model of emotions, a sample from the city of Karachi, CB-SEM estimation and this contemporary context of the market and, therefore, a methodologically complementary and substantively updated contribution to a recently growing topic in the literature that yet remains subject of controversies.

Hypotheses Research

- H1:** Emotional finance negatively influences on investment decisions of investors at the Pakistan Stock Exchange, Karachi.
- H2:** Financial literacy has a significant moderating effect on the relationship between emotional finance and investment decisions among investors at the Pakistan Stock Exchange, Karachi.

METHODOLOGY

Research Design

It is decided that the study model follows a quantitative, explanatory new design that is suitable for testing directionality and moderating relationship that has been already determined in the three latent constructs (emotional finance, financial literacy, investment decisions). Create a plan for locating and sampling the population.

Population, Sampling, and Sample Size

Respondents for this study were individual investors in the PSX, Karachi/Islamabad. Data were collected using the convenience and snowball sampling method; thus, non-Probability sampling methods were utilized first because investors available for the research to be conducted were sampled, and the heuristic of the method was to ask them to refer their fellow investors (see Etikan et al., 2016) who are active investors. Thirty percent of the responses were given that could

not be analyzed, leaving a total of 300 valid responses for analysis, in line with Roscoe (1975) who recommends 30-500 responses for behavioral research.

Instrument

Five-point scale of Likert (1 = strongly disagree, 5 = strongly agree) was adopted for data collection through a structured close ended questionnaire. Items were borrowed from the following previously validated instruments to measure overconfidence, disposition or herding items (from Lin, 2011), risk aversion items (from Weber et al., 2002), and financial literacy items (from Al-Tamimi & Anood Bin Kalli, 2009) (and five items to measure investment decision). The questionnaire comprised two parts: a demographic section, and a construct-measurement section.

Data Analysis Procedure

Data was analyzed in two steps: Step 1 Data analysis was done using SPSS version 26 and Step 2 using AMOS version 23.0. The descriptive analysis and calculation of a test's reliability (Cronbach alpha) provided a basic structure and internal consistency to the data. Second, in order to confirm the measurement model that was obtained from the factor loadings, confirmatory factor analysis (CFA) was performed using Composite Reliability (CR), Average Variance Extracted (AVE) and discriminant validity (Fornell & Larcker, 1981) based on the reference benchmark values (CFI and TLI > 0.90; RMSEA < 0.08; Jackson et al., 2009). Hierarchical regression analysis was used to test the direct effect of emotional finance on investment decisions (H1), and the moderating effect of financial-literacy (expressed as an interaction between emotional-finance and financial-literacy) on these investment decisions (hypothesis two, H2).

Methodological Positioning and Robustness Considerations

This paper employs an estimation strategy as per the type of underlying data (CB-SEM), which as per the research by Garson and Takaki (2004) provides robust overall model fit diagnostics (CFI, TLI, and RMSEA) but fails to provide native support for the variance based diagnostics used by the PLS-SEM estimation strategy utilized by some studies from the 2025-2026 group (e.g., Malik et al., 2026; Reddy et al., 2026: HTMT discriminant validity ratios, PLS predict

and importance–performance map analysis). Therefore, the present findings should be regarded as complementary to, but not in lieu of, the evidence derived from PLS-SEM, for the same market. Furthermore, we state that this survey does not incorporate AI/machine-learning techniques for bias detection (see Section 2.7), but we include it as an active space of research rather than an analyzed data set which should be seen as a priority area in the future for research of AI/machine-learning techniques as they are applied to this survey. Such transparency is purposeful: The study is a credible moderation study because it takes pains to describe what it can and cannot say in terms of the data and its estimation approach.

DATA ANALYSIS AND RESULTS

Reliability Analysis

The internal consistency (Cronbach's alpha) for each construct was good to excellent (Table 1) with a criterion of >0.70 .

Table 1. Reliability Analysis of Study Variables

Variable	No. of Items	Cronbach's Alpha
Overconfidence	5	.80
Disposition	5	.88
Herding	5	.81
Risk Aversion	5	.83
Investment Decision	5	.89
Financial Literacy	4	.91

Demographic Profile

Of the 300 respondents, 62.3% ($n = 187$) were male and 37.7% ($n = 113$) were female. The sample was heavy on middle-aged, experienced investors, as 51.3% of them were in 31-40 age group and 41.7% of investors were in over 40 age group with 7.0% of investors aged between 21-30. The respondents had high educational levels (66.7% had a BA/BSc/B.).Com, 29.7% a

Master's/BS, and 3.7% an M. Phil, with the largest number (26.7%) having been active trading for 1–3 years or less (Table 2).

Table 2. Demographic Profile of Respondents (N = 300)

Variable	Category	Frequency	Percent
Gender	Male	187	62.3
	Female	113	37.7
Age	21–30 years	21	7.0
	31–40 years	154	51.3
	Above 40 years	125	41.7
Qualification	BA/BSc/B.Com	200	66.7
	Masters/BS	89	29.7
	M.Phil	11	3.7
Experience	0–1 year	57	19.0
	1–3 years	80	26.7
	3–4 years	67	22.3
	4–5 years	73	24.3
	Above 5 years	23	7.7

Descriptive Statistics

Results also showed high mean scores for all emotional finance constructs, showing a high emotional involvement of PSX investors in their investment decision making. Risk aversion recorded the highest mean ($M = 4.23$, $SD = 0.34$), followed by overconfidence ($M = 4.11$, $SD = 0.28$), investment decision confidence ($M = 4.17$, $SD = 0.20$), disposition ($M = 4.02$, $SD = 0.31$), and herding ($M = 3.98$, $SD = 0.12$). The overall mean of financial literacy was 3.88 ($SD = 0.42$), indicating some mostly fair financial knowledge of the sample of supporters (Table 3).

Table 3. Descriptive Statistics of Study Variables

Variable	Min	Max	Mean	SD
Overconfidence	1	5	4.11	0.28
Disposition	1	5	4.02	0.31

Herding	1	5	3.98	0.12
Risk Aversion	1	5	4.23	0.34
Investment Decision	1	5	4.17	0.20
Financial Literacy	1	5	3.88	0.42

Correlation Analysis

All four emotional finance dimensions correlated negatively and significantly with investment decisions, and positively with each other, while financial literacy correlated positively with investment decisions and negatively with each emotional finance dimension (Table 4). The most negative association to be investment decision was risk aversion ($r = -0.48$, $p < .01$), followed by overconfidence ($r = -0.23$), disposition ($r = -0.17$) and herding ($r = -0.16$). Investment decision was positively correlated with financial literacy ($r = 0.37$; $p < .01$) and negative but significant ($p < .01$) with overconfidence ($r = -0.46$), risk aversion ($r = -0.46$), herding ($r = -0.33$) and disposition ($r = -0.28$).

Table 4. Correlation Matrix of Study Variables

Variable	1	2	3	4	5	6
1. Overconfidence	1					
2. Disposition	.46**	1				
3. Herding	.40**	.21**	1			
4. Risk Aversion	.30**	.21**	.31**	1		
5. Investment Decision	-.23**	-.17**	-.16**	-.48**	1	
6. Financial Literacy	-.46**	-.28**	-.33**	-.46**	.37**	1

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

Measurement Model (Confirmatory Factor Analysis)

An initial measurement model had an above acceptable fit; derivation of a modified model by the exclusion of items with low and the cross-loadings resulted in an improved fit (CFI and TLI > 0.90 ; RMSEA < 0.05 ; Table 5). All factor loading values were above 0.50, along with Composite Reliability values above 0.70, Average Variance Extracted values above 0.50 for each construct confirming convergent validity and Maximum Shared and Average Shared Variance

values below AVE values for all constructs confirming discriminant validity according to the Fornell–Larcker criterion (Table 6).

Table 5. Model Fit Indices, CFA Modified Model

Index	Value	Threshold
CMIN/DF	1.79	< 3
GFI	.938	> .90
AGFI	.917	> .90
TLI	.964	> .90
CFI	.911	> .90
PCFI	.949	> .90
RMSEA	.041	< .05 / < .08

Table 6. Convergent and Discriminant Validity

Construct	CR	AVE	MSV	ASV
Overconfidence	.763	.592	.431	.379
Disposition	.710	.614	.422	.432
Herding	.739	.562	.419	.415
Risk Aversion	.741	.586	.445	.394
Investment Decision	.787	.644	.458	.387
Financial Literacy	.811	.523	.452	.426

Hypothesis Testing

H1: **(direct effect of emotional finance on investment decisions)**..The results of the structural model indicate that emotional finance negatively loaded ($\beta = -0.29$ and $p < 0.001$) on the investment decision with all the indicator loading values above 0.50 and model fit turns out to be quite good (Table 7).H1 is supported; the life quality of the PSX investors' investment decisions is reduced when stronger emotions are acting in the finance world.

Table 7. Model Fit Indices — Hypothesis 1 (Structural Model)

Index	Value	Threshold
CMIN/DF	1.62	< 3
GFI	.981	> .90
AGFI	.922	> .90
TLI	.947	> .90
CFI	.909	> .90
PCFI	.953	> .90
RMSEA	.038	< .05 / < .08

H2 (**moderating role of financial literacy**). Emotional finance $\times$ financial literacy interaction term significantly attenuates the direct path between emotional finance and investment decisions and the moderation model indexes are strong (1.28 CMIN/DF, .957 CFI, .918 TLI, .034 RMSEA, Table 8). H2 is supported; the more financially literate investors are more likely to reframe or overcome emotional biases in making their investment decisions and hence will generate more rational investment results, while investors with less financial literacy will be more susceptible to overconfidence, disposition, herding, and risk-averse inclinations.

Table 8. Model Fit Indices — Hypothesis 2 (Moderation Model)

Index	Value	Threshold
CMIN/DF	1.28	< 3
GFI	.923	> .90
AGFI	.964	> .90
TLI	.918	> .90
CFI	.957	> .90
PCFI	.933	> .90
RMSEA	.034	< .05 / < .08

Discussion

The results indicate that an emotional finance effect, negative and predictable in direction, which applies to investment decision quality at the PSX, as has been found in the rest of the behavioral finance literature (Gervais & Odean, 2001; Hirshleifer & Teoh, 2020; Baker et al., 2021). Specifically, risk aversion had the highest mean score on the four dimensions of emotional finance and the largest negative correlation with investment decisions ($r = -0.48$), indicating a robust tendency of PSX investors to miss out on good investment opportunities possibly because of their increased caution and concern. This behavior corresponds remarkably to the high level of risk aversion that was recorded during the tariff shock in April 2025 as the macro-financial uncertainty was significant, with investors moving towards safe haven assets the world over (Díaz & Esparcia, 2019; Vantage Markets, 2026).

The overconfidence measure exhibited a relatively weaker but still negative relationship with investment decisions ($r = -0.23$), which aligns with the previous study by Malik et al. (2024) who found that overconfidence played an intermediate and negative role through a higher risk-taking appetite rather than being a completely negative factor. Disposition and herding had the weakest, but still meaningful, negative correlations, $r = -0.17$ and -0.16 respectively, which falls in line with Liu et al (2023) and Ullah and Kakakhel (2020), who both refer to these biases as fairly small and pervasive additions to the impact of fear-driven risk aversion.

This confirmed moderating effect of financial literacy (H2) builds upon an expanding literature in 2024–2026. This is consistent in direction with the recent Rasool-Ullah (2020) and Yanti-Endri (2024) PSX-based PLS-SEM studies (with differences only in the underlying construct of behavioral biases and the sample size) as well as with the current study by Malik et al. (2026) which concludes that financial literacy has a comparatively small effect size ($f^2 = 0.133$) due to its broad factor of “behavioral biases” and its non-Karachi sample. In this current study this fact coupled with the four dimensions CFA-SEM and a sample drawn from the city of Karachi indicates that the effect of the moderating role of financial literacy could be underestimated if the emotions are not broken down into the four emotional biases like the other authors in this paper did, since in the current study the emotions were given as an undifferentiated composite.

This suggests a direction for future PSX studies in the way they specify their models. Darwish (2025) noted that the Palestine Stock Exchange result that overconfident people's financial literacy has a positive effect on the relationship between literacy and decision-making is a timely reminder to still not make the assumption that financial literacy moderate in the same direction and degree along all emotional aspects of finance. The current study's overall emotional finance measure was unable to distinguish between the moderating effects on overconfidence and other constructs such as herding, and this is suggested as a desirable direction of future PSX research (Section 8).

Last, but not least is the demographic profile of the sample: mostly middle-aged, well-educated investors, who have moderate financial literacy ($M = 3.88$). Financial literacy is a key factor but it clearly has interaction with demographic and experiential measures which are only partially reflected in a single cross sectional moderation model as noted by Metawa et al. (2019) and Adil et al. (2022).

CONCLUSION

The study aimed to investigate the effect of emotional finance on the investment decision making among the Individual Investors at the Pakistan Stock Exchange (PSX) and also to assess the moderating role of financial literacy between emotional finance and investment decision making. Results obtained from the analysis of 300 active investors of PSX Karachi confirm both hypotheses findings: firstly, evidence shows that emotional finance negatively affects the investment decision (producing $\beta = -0.29$ and significant p value ($< .001$)) and secondly, the evidence indicates that financial literacy is a strong moderator of the association between emotionally intelligent investors and their tend to conduct investment decisions in cognitive ways (producing cognitive buffer-marking effect, $\beta = -0.75$ and significant p value ($< .001$)). Risk aversion proved to be the most significant emotional finance factor, which resonates particularly given the volatility of the PSX and global markets following and during the tariff shock in April 2025 as part of policy action. Though helpful, emotional influence does not go away with financial literacy; the vast majority of this sample, with moderate literacy, are still subject to potentially biasing errors and even with financial literacy we need to appreciate that it is not enough.

THEORETICAL IMPLICATIONS

The results of the study contribute to the theory of behavioral finance and to prospect theory by applying the principles to an environment of frontier markets, with limited formal advisory infrastructures and a strong dependence on informal information. This study emphasizes that the modelling of the four dimensions of emotional finance together and not individually is important and complements the understanding of emotional finance as coherent construct with individual dimensions weighted differently. Indeed, the current study shows that in this sample, the two first dimensions of emotional finance, disposition and herding bias, are more weighted than risk aversion and overconfidence, which cannot be captured by single-bias studies.

Practical Implications

The findings support the decision to keep and further develop the current Financial Literacy Initiative (SECP, 2026) in the SECP and in the PSX since risk aversion can be seen as the most important factor related to poor choices, a factor that can be actively trained. The results support the recommendations of Malik et al. (2026) and Rasool and Ullah (2020) for including a behavioral screening element in the onboarding process for brokerage firms and financial advisors. Beneath their surface, the findings indicate that for investors, structured decision rules, diversification of investments, and pre-commitment strategies could prove to be more effective than deciding for oneself in real time, especially during macro financial shocks like the period from April to May 2025 when emotions are likely to be strongest, and when the benefits of deliberate, literacy-informed judgement are likely to be greatest.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Several caveats qualify these results and in combination, establish a course for future research. The data are cross-sectional, meaning that they are taken at one point in time, and therefore a market's time dependence or development, which is related to emotional finance, literacy, and decision quality during the type of market volatility experienced in 2025, cannot be accounted for. A longitudinal design or a design based on specific shocks (e.g., the April 2025 tariff sell-off or the May 2025 rally) would give the researcher the chance to get a firsthand look into the changes within investors.

Second, convenience or snowball sampling risks producing limited generalizability that may over-represent socially connected and relatively seasoned investors, who may be the more motivated to actively invest, and would benefit from the use of probability-based sampling or from using a platform-registry approach to sampling.

Third, the study adopts a covariance-based approach for SEM and the results are substantiated with PLS-SEM using HTMT discriminant-validity testing along with the current CB-SEM results, thus meeting the requirement of triangulating both approaches that are most often used in this literature (cf. Malik et al., 2026; Reddy et al., 2026).

Fourth, this study did not use machine-learning or AI-assisted bias-detection methods for trading-record data or sentiment data, as previously noted in Section 2.7. Natural validity would be another way of testing the relationship between emotionally-worded finance measures and the actual behavior of PSX trading, as drawn from brokers' transaction history, for instance, through clustering or classification models (Khomane & Bhinge, 2025), which is a growing trend in AI-based behavioral finance research since 2024. Fifth, financial literacy is analyzed as a moderator effect on the four emotional dimensions of the study, whereas future studies can include positive emotions (optimism, excitement), regret aversion, and anchoring, and can also disassemble the financial-literacy moderator effect on the four dimensions of emotions based on bias, based on the caution raised by the contrasting results related to the overconfidence dimension by Darwish (2025). Finally, cross-market replication (Darwish, 2025; Reddy et al., 2026) could enable identification of any patterns unique to PSX and any wider ones of emergent market investor behavior.

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