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Impact of Herding Behavior on Investment Decision in an emerging Stock Market with Mediation-Moderation Effect

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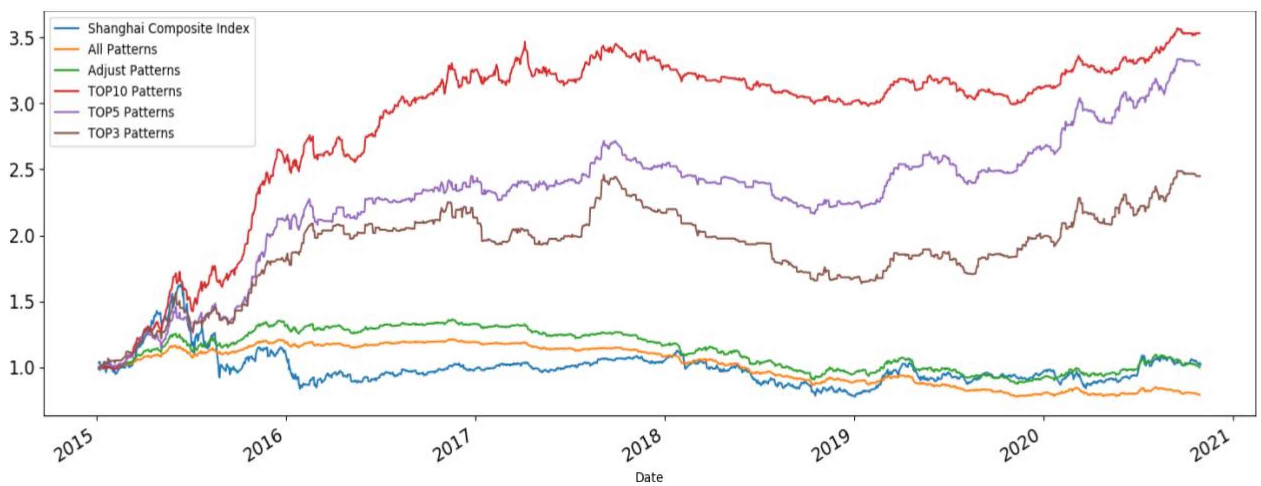
Abstract

This research examines the influence of herding behavior on investment decisions made in Pakistan, with the moderating role of financial expertise and overconfidence as a mediating factor. According to traditional financial theories, the rational individual investor makes all of his decisions based on the facts at his availability in order to enhance his capital. In contrast, behavioral finance fully rejects this notion and contends that psychological factors play a role in how people make financial decisions. Information is gathered from 200 investors who trade on the Pakistan Stock Market using a simple survey form. The findings indicate that herd significantly improves both overconfidence and investing decision. Overconfidence has an adverse influence on investment-decision. Financial literacy acts as a positive moderator, whereas overconfidence acts as a negative mediator between herding behaviour and investing decisions. SMART-PLS is employed for data analysis.

Keywords: Herding behavior, overconfidence, Financial literacy, investment decision

Introduction

The stock market is where buyers and sellers of securities transact. For corporate companies, the securities market serves as a source of investment capital, Providing (1996). The state and development of a nation's financial markets are also gauged. Market trends or the movement of the securities market determine a nation's economic viability. Increase in stock prices is seen as a crucial economic indicator. According to Rasheed et al. (2018), the Pakistan Equity Exchange had the best performance in Asia in 2016 and ranked sixth internationally in terms of market performance. Because investors must take into account risks, uncertainties, alternatives, and environmental concerns, their financial decisions are complex. Investors, based on traditional finance theory, are logical and think rationally when deciding to make investments in stocks, Markowitz (1952), Sharpe (1964). According to Simon (1955), behavioural finance theory undermines conventional financial theory since it maintains that shareholders do not behave rationally.



Behavioral finance explains why people regularly make poor investing decisions. It addresses inefficiencies such investor information overreaction. It discusses how characteristics like overconfidence and investor herding behaviour impact financial behaviour. Many studies have examined the impact of financial literacy (FL), also known as financial knowledge, on financial behaviour. Financial literacy has a major impact on several aspects of financial behaviour, claim Aren and Aydemir (2014). In addition to analysing the moderating and mediating effects of overconfidence and financial knowledge, the researchers investigate the methods through which

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Pakistani investors' assessments are influenced by herding behaviour (the independent variable). The dynamics of the link between herding behaviour and financial investments are becoming better understood using mediation and moderation strategies.

Investors with insufficient financial literacy are more prone to make irrational or unfavorable investment decisions, in accordance with Fedorova et al. (2015). According to academics, investors with insufficient financial literacy have an undiversified portfolio and avoid security investments. Son and Park (2019) claim that people change their behavior based on the knowledge and information they have acquired, and investors make decisions based on financial knowledge and information.

Problem Statement

Several investors believe that major investors are manipulating the Pakistani stock market due to recent ups and downs. Hence, in order to maintain a strong and secure financial system, it is required to design and investigate individual investment decisions, suitable financial advising rules and services, as well as to develop digital and social media campaigns. The skills and information needed to make lucrative stock market investments are often lacking among investors. And knowledgeable brokers and investors make all of their investment decisions. A detailed investor profile research is important for better financial advice.

Research Objectives

The purpose of the study is to investigate the connections between individual investing choices in Pakistan and herd behaviour. to determine the effects of herding behaviour and the mediating function of overconfidence on people's investment choices. to glean valuable information applicable to this field from the study's findings. The last phase is to investigate how the relationship between investment choice and herd behaviour is impacted by financial literacy.

Research Gap

Financial knowledge is a crucial factor that is no longer discussed in Pakistan, since the majority of individuals lack financial knowledge. There have been few studies on this topic that show financial education is widespread and people lack understanding, even on basic economic principles. According to Hayat and Anwar (2016), financial literacy moderates the association

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among overconfidence and investment-decision while adversely moderating among herding and investment-decisions. Financial literacy, according to Khan (2014), moderates the relation between overconfidence and investment performance. Many people in Pakistan lacks financial knowledge and the technological skills required to make investments in stocks, and the middleman takes advantage of this weakness to deceive investors. This research seeks to complete a vacuum in the current literature by presenting and analyzing empirical information on the connection between herding behavior and investment-decisions, with financial education acting as a moderator and overconfidence acting as a mediator. In this study, overconfidence bias is a substantial mediating factor and financial literacy FL is a significant moderator. Neither of these variables has ever been studied in this context previously. This makes this research unique.

Research Questions

Below are the study's research questions.

- How people's financial decisions substantially impacted by herd behavior?
- How can overconfidence bias influence herding and investment decisions?
- How does financial knowledge affect investing choices and herd behavior?

Significance of the Study

This research is critical for investors since securities market in emerging nations, like Pakistan's, are often inefficient and subject to a range of influences. Political and economic processes both have an impact on the financial markets, but the ideas and feelings of individual investors are just as significant, Boda & Sunitha (2018). Shareholders lose a lot of money in the Pakistani securities market, is also known as PSX because individuals do not correctly predict whether the market will go up or down. This study is however significant for individuals who want to invest in volatile and unsophisticated stock markets, because they're more inclined to have negative feelings. This study will assist operators and policymakers in the securities market in better understanding the dynamics of behavioral bias in investor decision-making. Future scholars who wish to conduct research in this area will find this study to be helpful. They might build on the strategy and conclusions of this essay to get beneficial insights.

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Literature review

Investment Decision Making

The act of putting money into an asset in the hope of getting a return later on is called investing. Investor decision-making can succeed with research and an optimistic outlook. Every investor wants to increase the return on their investment. To compare judgements from a benchmark position, Sharpe (1964) established the highest level of uncertainty for a certain level of predicted return. Recent research has shown how financial information influences the wisest and best financial decisions. Merton (1987) asserts that a person's decision-making is more prudent the more financial literacy he possesses. Even though research over the last two decades has focused on the investor psyche's behavioural phenomena through "cognitive unconsciousness," which actually refers to possessing conceptions, ideas, and emotions even without being knowing of them, to explain why shareholders make bad judgements, Hilton (2001). The emotional state of an investor may cause their rational investing deicision process to deviate into irrational behaviour, Baker and Nofsinger (2002).

According to traditional financial theories, shareholders are entirely rational; but, in reality, they are influenced by a variety of factors paired with characteristics that limit rationality on a behavioural and psychological level. Ritter (2003). Because investors may not always be sane and

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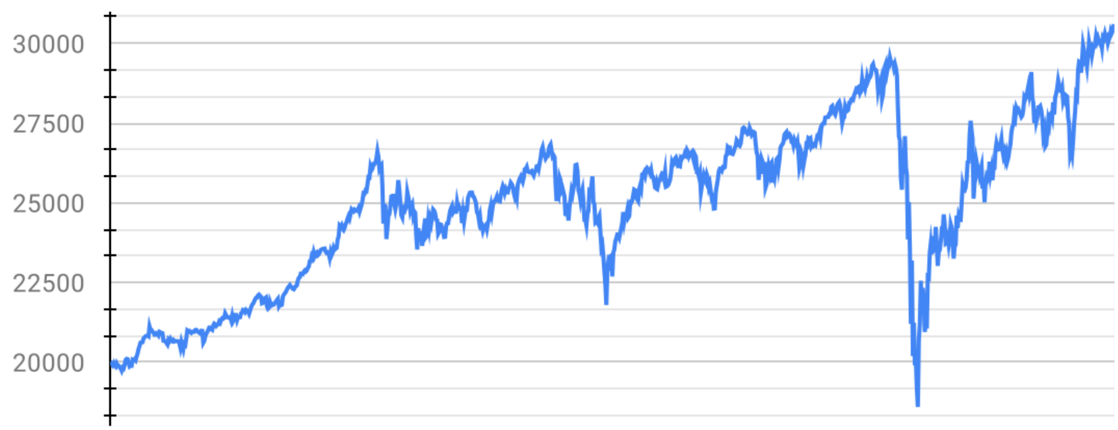
logical and because their own judgements can be impacted by cognitive and behavioural assumptions, behavioural finance theories should be used to study investment decision-making. This is vital for strengthening investors' awareness of the real world.

Herding Behavior

Herding's Impact The first to identify it was Shiller (2000) and Kahneman & Tversky (1979). Herd behavior is a phenomenon that occurs when competent individuals tend to act unreasonably by imitating the results obtained by others while making substantial decisions. For a number of reasons, herding can arise amongst distinct types of investors. individual investors frequently exhibit herd behaviour because they copy the judgments of other investors or noisy traders. Analysts may rely on prior decisions/experiences or follow others to maintain their compensation or reputation. Lee et al., (2004) claim that individual investors are more likely than institutional investors to display herding tendency. Furthermore, Grinblatt et al. (1995), and Wermers (1999) conducted substantial researches on herd behaviour in financial decision.



Herding Behavior and Investment Decision

Herding behaviour refers to the act of copying other investors impulsively. According to herding behaviour, if one investor selects security "A," the others will likely do the same without coming up with their own strategy. Bashir, Arshad, Nazir, and Afzal (2013) claim that Pakistani investors prefer to act in a herd-like manner and are swayed by the advice of their immediate family members. According to economic theories, investors make logical decisions after carefully weighing all available information. Economic theories presuppose that investors are unbiased and consider all pertinent information before making judgements, but in reality, there is a lot of information out there, and it is hard for an investor to analyse it all. So, investors use a shortcut to make a judgement. Investors require a lot of the appropriate information while making decisions. Investors may evaluate data and lose money if it is inaccurate or not on the right side. Due of their limited financial means, individual investors generally do not obtain information.

Herding does indeed have a bring impact, according to one study, indicating that past herd behavior may have an influence on subsequent herding tendency, Hachicha et al. (2007). According to Van Campenhout & Verhestraeten (2010) experts prefer to give negative estimations when they are uncertain or only have limited information. Women seem to be more susceptible to herding tendencies and thus are more likely to blindly follow many financial categories, Lin (2011). Youthful market participants are also much more susceptible to herd prejudice so older, more investment managers Hassan, Shahzeb, & Shaheen (2013); Subash (2012). Herding really does have a detrimental impact on financial selections in a number of countries, Agarwal, Verma, and Agarwal (2016).

H1: Investors' securities investment decisions are significantly influenced by herding behavior.

H2: Overconfidence is significantly influenced by herding behavior.

Overconfidence

According to pompain, (2006) Overconfidence is a cognitive heuristic error characterized as inappropriate assurance in another's interpretations, perception, and cognitive talents. Whenever someone exaggerates their competence and technical expertise, they are displaying over-confidence, De-Bondt & Thaler (1995); Hvide (2002). Overconfident people, as per psychiatrists, overstate their degree of expertise and knowledge. Chernoff (2010) argues that numerous people exaggerate what they're not and undervalue what they are; Such individuals experience cognitive distortions.

Overconfidence might occur because shareholders do not adequately amend their previous assessments while acquiring further knowledge, and hence may not grasp how faulty their evaluations could be, as per Simon et al. (2000). A person who feels that their judgement is overly

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certain is overconfident. According to Abbes et al. (2009), financial specialists overrate the quality of their evaluation abilities, which causes investors to base their financial decisions on their own personal indications while ignoring publicly available information.

Overconfidence and Investment Decisions

The overconfidence prejudice has a significant and negative effect on investor selection, as per Bakar & Yi (2016). Overconfidence tends to cause shareholders to underrate risk factors while overestimating profit margin. Baker and Nofsinger (2002) barely diversified, and their own investments dealt aggressively, leading to reduced profitability or yields than that of the economy, Odean (1998). Traders exaggerate one's ability to correctly predict movements, due to inaccurate predictions, Shefrin (2000). According to (Odean, 1998), excessive trading activities occur in the securities market, which causes dealers to make poor decisions due to their arrogance. Validation and overconfidence used to have a positive impact on traders' profits, but Park et al. (2010) found that they now have a detrimental effect.

Mediating role of overconfidence

Overconfidence bias, according to Park et al. (2010), has an adverse impact on investment choices. Overconfidence and over optimism are psychological qualities that influence people's decision-making processes, Gervais and odean (2001). According to Kafayat (2014) and Seppälä (2009); over-confidence distortion seriously harms the potential of investors to make smart selections.

We anticipated that overconfidence had a serious and harmful effect on sound assessment after reviewing the existing literature. Excessive trading and ineffective transactions are made by overly confident investors, decreasing their investment returns. This study advances the subject of behavioural finance by revealing how overconfidence serves as a bridge between herding behaviour and investor financial decisions. The outcomes of this research provide the first indication of the mediator's role in the connection among herding behavior and investment choices.

H3: Investors investing decisions are significantly influenced by Overconfidence.

H4: Herding behavior and investors' securities investing choices are mediated by overconfidence.

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Financial Literacy

Financial literacy is primarily about knowing how to manage available funds, according to Huston (2010). Financial literacy is the "ability of a human to comprehend and apply strategic principles." The impact of financial knowledge on choosing investors is described here by Servon and Kaestner (2008).

Financial Literacy and Investment Decision

Risky financial decisions and financial practices have been blamed on financial reporting and auditing Hassan et al. (2009). Ineffective managing risk, return monitoring, and resource misallocation are all consequences of insufficient literacy, Banks and Oldfield (2007). People with a higher financial knowledge made wise financial decisions and those with a lower knowledge level, Awais et al., (2016). They also predict that as financial data becomes more readily available, investors' capacity to analyse it will improve, helps in improved portfolio selections and thus more effective investment strategy management, resulting in higher returns. Financial literacy influences investment decisions favorably, according to Jappeli and Padula (2013), and it also assists people in maximizing the value of their belongings. Lusardi et al. (2010). Based on prior study, it is expected that the preceding association will exist:

Moderating Role of Financial Literacy

With reference to the relationship between the level of financial literacy and investment decisions, it has been observed that highly literate investors prefer and use different techniques when making an investment decision than low-literacy investors. Highly literate investors prefer to use financ ia l publications, whereas low-literacy investors relay more on advice from family, friends, and stockbrokers. Due to this investors mostly show overconfidence, herding behavior and dispositio n effect because they were illiterate so they was unable to do and decision and they do same thing as other investors when other investors sell the stock they sell when they seek little profit in stock they immediately dispose it and don’t wait for more increase in price same they show overconfidence while picking up the stock and do wrong decisions (Tamimi and Kalli, 2009).

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It has been demonstrated that investors with a reasonable level of education favor and use distinct strategies than investors with a lower level of education when it comes to the relationship between financial literacy and an investment-decision. Highly educated traders use financial magazines, whereas less educated traders depend more on stockbrokers, close relatives, and friends for advice. Investors typically demonstrate the disposition effect, over-confidence, and herd behaviour because they have a lack of education and incapacity to make independent decisions. They behave similarly to other investors when they sell stocks for a little profit but do not wait for additional price gains. Tamimi and Kalli (2009) also demonstrate overconfidence while selecting stocks to buy and make poor decisions.

H5: Individual investors' projects on the PSX are significant influenced by their financial literacy.

H6: The association with herding bias and stock market investment decisions is moderated by financial literacy.

Conceptual Model

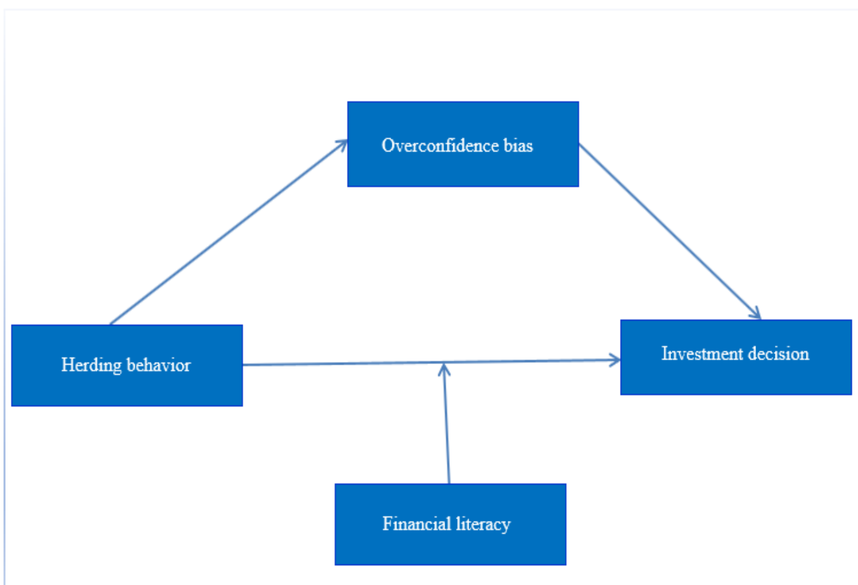

Figure 1: Research Model

Research Methodology

Research Approach

We used a deductive approach, in which researchers develop hypotheses based on recognised theory and evaluate them against actual evidence. Given that the main goal of this study is to show the relationship between behavioural traits and already-suggested investment decisions, deduction may be the most useful strategy in this case. The research approach used in this study was explicative. Explanatory research aims to connect concepts in order to better understand cause and effect relationships. It displays the connections and interactions between several items.

Research Design

In order to assess how overconfidence and financial literacy affected the relationship between herding behaviour and investment decision, a quantitative cross-sectional research framework was created. This study's main objective is to test hypotheses since doing so helps researchers better understand how the variables relate to one another.

Sample and data collection:

Research Methodology

Sample and data collection:

The purpose of this study is to identify the “Impact of Overconfidence Bias, Herding Bias and Disposition Effect on Investment Decision by keeping in mind the Moderating role of Financial Literacy. In order to achieve the purpose of study, a structure questionnaire was design to collect the data for further statistical test. The target population for this research was to collect data from those peoples who have investment in Karachi Stock Exchange and Islamabad Stock Exchange Pakistan. The sampling technique which is used in this research paper is to collect informa t io n

from people who were most appropriately available is non probabilistic method. The reason to use this technique is to gather large number of information easily and also the cost is very low. The respondent participate voluntarily and it was assured their responses will be keep confidential and only will only be used for this research. Keeping 5% error margin and 95

confidence level, a total 220 sample size was selected and questionnaires were distributed. From 230 distributed questionnaires 180 were received back and out of them 22 questionnaires were filled improperly and 158 were useable for this research. So
the respondent rate is 72%. The questionnaires were distributed by hand to different investors, brokerage house, and organization and from some users online data was collected who had access to internet.

This study uses cognitive bias (overconfidence bias) as a mediator and financial literacy as a moderator to examine how herding actions affect individual investors' financial decisions when buying and selling on the Pakistani securities market. A systematic questionnaire was created to gather material for further statistical testing in order to accomplish the goal of the study. The target respondents in this study are people who have already made investments along with those who are able to make investments. Most of the applicants were Entrepreneurs, managers and directors, government and non - governmental personnel, professors, teachers, civil servants, students, retirees, and bank officers. The convenient sampling approach was employed to choose participants for this research. The purpose of employing this approach is to quickly collect a lot of information at a minimal price. The participants gave their answers willingly and were promised that they would be kept confidential and only utilized for this research. Individual Pakistani investors who trade on the PSX received 250 questionnaires in total. Although 220 questionnaires were returned, only 200 were actually filled out and utilized for analysis, displaying an 88% rate of response.

Questionnaire Development Procedure

All questionnaire items were replied on a scale of Likert extending through one (strongly agree) to five (strongly disagree). The following queries were collected from prior studies for this analysis. There are five sections to the questionnaire, from A to E. In part A, the participants were inquired about their personally identifiable information. The remaining components are discussed in greater depth further down.

Section B: Five items of herding behavior, adopted from Moueed et al. (2020). Section C: Five overconfidence items, adopted from Mouna & Anis (2015). Section D: Five financial literacy

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items, adopted from Wanyana (2012). Section E: Five items of investment-decisions, adopted from Moueed et al. (2020).

Analysis and Results

Descriptive analysis

The study sample had 200 responses overall, as was previously reported. Out of all these, 99 respondents (or 45% of the overall sample size) were female, and 121 respondents (or 55%) were male. 19.39% of the participants are under 25 years old, 34.61% are among 26 and 33, 25.68% are between 34 and 41, 14.19% are between 42 and 49, and 6.13% are above 50. The research found that 60.29% of security market investors are between the ages of 26 and 41. This signifies that the vast majority of young people are investing their money in the security market. The majority of respondents (55.8% of the sample population) were unmarried, while 44.2% were married. This signifies that the majority of single respondents are wi8lling to take on risk and are making investments in the securities market. Income level is another significant factor. 37.20% of investors have monthly income between Rs 25,000 and Rs 50,000; accompanied by 23.30% between Rs 50,001 and Rs 75,000; 14% among Rs 75,001 and 100,000; 16.30% in between Rs 100,001 and 125,000; and 9.30% have income above Rs 125,001. Most participants (37.20%) monthly make in between Rs. 25,000 and Rs. 50,000, along with Rs. 50,001 to Rs. 75,000. It shows that some stock buyers have small incomes and buy securities to raise them.

As majority fall under between
18 to 25 ages so most of the respondent were unmarried, that were 69% of the total sample size

Marital Status of Investor

Inferential analysis

Data analysis

A multidimensional analytics technique called structural equation modelling (SEM) uses both observable and latent data to assess structural theories, Chima & Carvalho (2014). Since it is a contemporary strategy, Ramayah et al. designed the questionnaire using data from several studies

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and used SMART-PLS for analysis (2018). It's been drawn up as a diagram. when the figure is plotted and its reliability and validity are checked.

Measurement Model

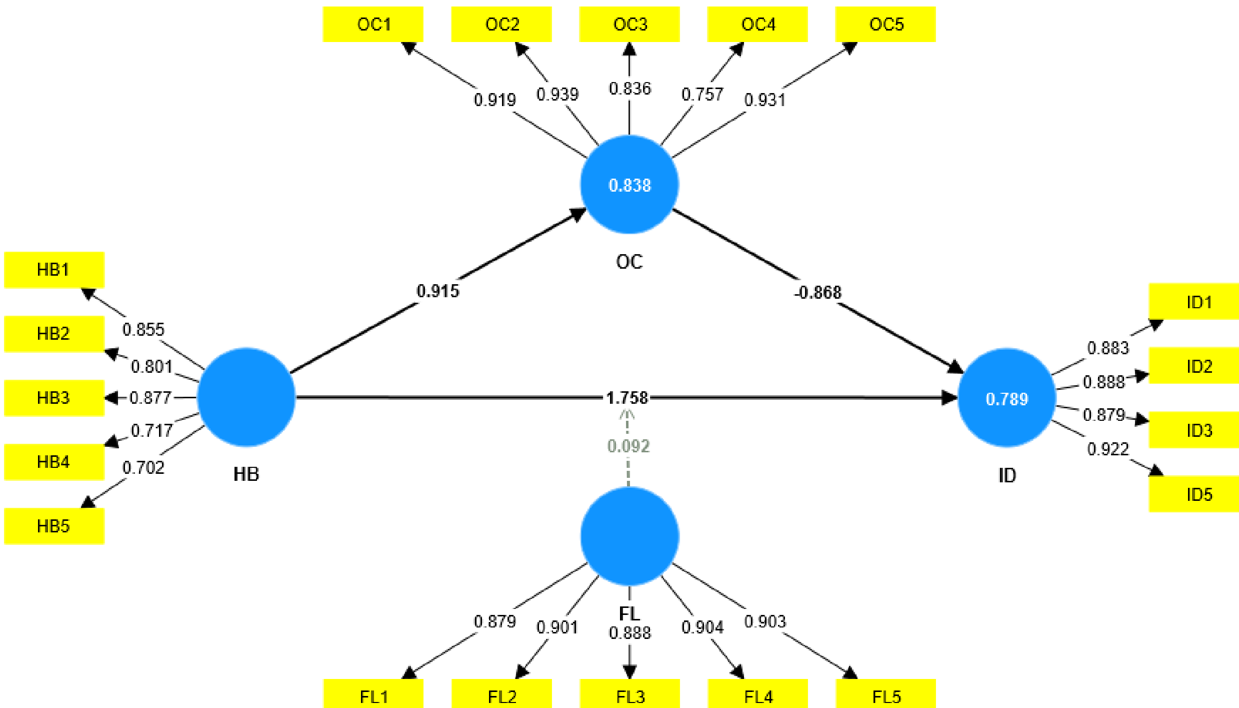

Figure 2: Structural Equation Model (PLS Algorithm)

Table 1: Construct Reliability and Validity

	Indicator item	Indicator loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
FL	FL1	0.879	0.938	0.952	0.953	0.801
	FL2	0.901				
	FL3	0.888				
	FL4	0.904				

	FL5	0.903				
HB	HB1	0.855	0.85	0.86	0.894	0.629
	HB2	0.801				
	HB3	0.877				
	HB4	0.717				
	HB5	0.702				
ID	ID1	0.883	0.916	0.926	0.94	0.798
	ID2	0.888				
	ID3	0.879				
	ID5	0.922				
OC	OC1	0.919	0.925	0.943	0.944	0.772
	OC2	0.939				
	OC3	0.836				
	OC4	0.757				
	OC5	0.931				

Cronbach's alpha and Composite Reliability are employed to evaluate the internal stability and consistency of multidimensional construct components. Cronbach's alpha and CR are both larger than 0.7, demonstrating strong internal consistency reliability. Furthermore, the AVE is calculated to assess convergent validity, and it is higher than 0.5 for all components, suggesting strong convergent validity. The indicator loadings demonstrate a reasonable degree of reliability, with all factors loaded more than 0.7, while ID4 was eliminated owing to poor factor loading.

Analysis of Structural Models (SEM) Using Smart-PLS

After creating the model, we must perform the bootstrapping calculations in order to run the SEM in the SAMRT-PLS:

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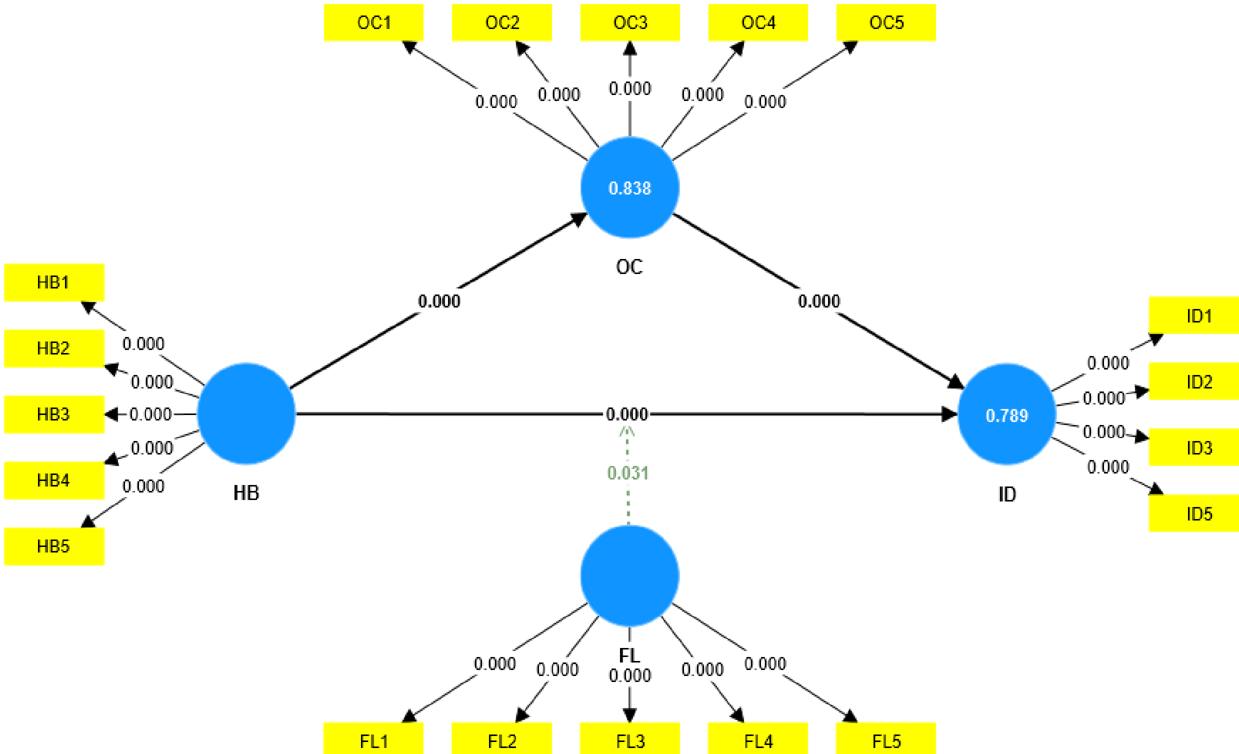

Figure 3: Model for Structural Equations (bootstrapping)

Table 2: Hypothesis testing through path coefficient:

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
FL -> ID	0.35	0.346	0.072	4.847	0
HB -> ID	1.758	1.766	0.057	30.832	0
HB -> OC	0.915	0.916	0.006	148.34	0
OC -> ID	-0.868	-0.884	0.119	7.278	0
FL x HB -> ID	0.092	0.093	0.043	2.162	0.031

With a p-value of 0.000, overconfidence in the aforementioned table has a significantly adverse influence on investment decisions, thus H3 is approved. Similar to overconfidence bias, herding behavior displays a substantial positive link between investment choice and overconfidence and both H1 and H2 with a p-value of 0.000, indicating that both hypotheses are accepted. H6 is accepted because the moderating effect of financial literacy has a positive connection with investment decisions (p-0.031), indicating that it has a moderating effect on both behavioral factors and investment decisions. H5 is acceptable since there is a substantial positive link among both financial literacy and an investment decision with a p-0.000.

Mediation Analysis

Table 3: Indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
HB -> ID	-0.794	-0.809	0.107	7.396	0.000

The preceding table reveals that herding behavior has a substantial negative link with investing decision, with a p-value of 0.000, and thus H4 is accepted. So, overconfidence has a mediating effect on herd tendency and investing decisions.

Hypothesis Summary

Table 4: Hypothesis Analysis

H1: Investors' securities investment decisions are significantly influenced by herding behavior.	Accepted
H2: Overconfidence is significantly influenced by herding behavior.	Accepted
H3: Investors investing decisions are significantly influenced by Overconfidence.	Accepted
H4: Herding behavior and investors' securities investing choices are mediated by overconfidence.	Accepted

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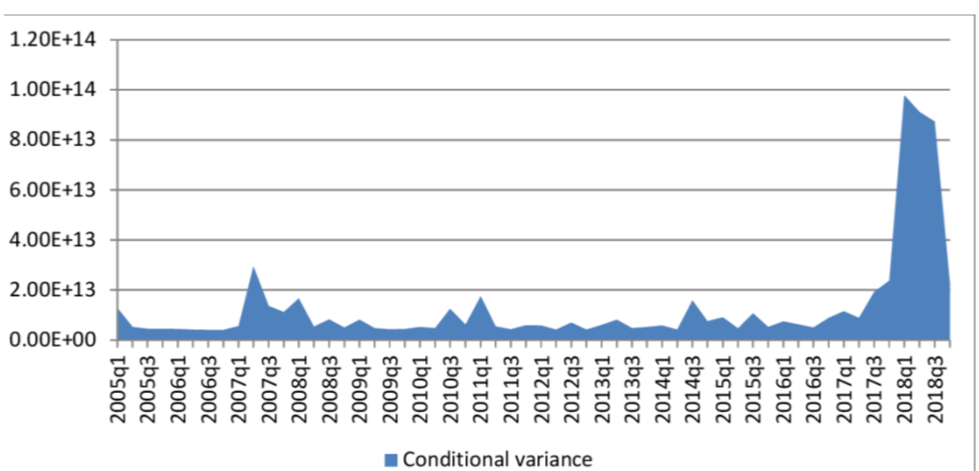
H5: Individual investors' projects on the PSX are significant influenced by their financial literacy.	Accepted
H6: The association with herding bias and stock market investment decisions is moderated by financial literacy.	Accepted

Conclusion

Understanding the impact of one's own psychological factors on stock market decisions is crucial for investors and market players. With this knowledge in hand, people may use it to their advantage and take action to prevent the effects from clouding their judgement so they can make the right choices. Policymakers and regulators in the security market will benefit from this study's improved comprehension of the impact that psychological factors have on investor decision-making. This study examines the influence of herding behavior on investing choices with mediating effect of overconfidence as well as the moderating effect of financial knowledge on the Pakistan Securities market According to classic financial theories, investors make decisions after examining and assessing all essential stock-related data prior to making investments to increase their assets and utilization. However, behavioural finance theory entirely rejects these suppositions, attempting to argue that it is impossible for market forces to be fully logical and that there cannot occur a powerful form of market performance in which all investors hold access to the identical information, are extremely knowledgeable, and take actions relying on their personal expertise, academic credentials, and assessment. Financial behaviour discovered psychological weaknesses and their implications on investor investing decision.



A study questionnaire is developed and used to gather responses from a group of 200 participants in the Pakistani securities market using practical sampling approaches. The results show that overconfidence has a negative impact on an investor's judgement, whereas herding and financial literacy have positive effects. The results above show that financial literacy plays a key role in making rational judgements, even though past study argued about the importance of behavioural factors on investing decisions. Chaudhary (2013).

Practical Implications

Several investors rely their financial selections on the recommendation of others and lacking their personal unique perspective. Investors must attend stock market courses prior investing in the stock market to understand how to perform technical analysis on the market. Investment decisions have a significant influence on an investor's personal and social life, and bad investment choices has a massive effect on an investor's human and social life, thus it is necessary to prevent these prejudices. There are various additional market flaws that might impact an individual's investing decisions; hence, it is better to give investors with technical knowledge on how to avoid these prejudices and avoid drawing conclusions that could result in a major financial loss in the future.

Limitation and Direction for Future Research

The survey instrument used for this study is frequently criticized because of its generalization issues. The responses are inadequate for this study, and it's possible that respondents' answers were distorted, leading to incorrect results. The findings are entirely dependent on respondents' fairness and honesty. Finding the real results is quite tough because people fail to disclose their genuine income and investment. Time is another obstacle while conducting this research. In the future, the researcher may decide to conduct this research utilizing a distinct technique and mediating or moderating factor. Researchers might employ a bigger sampling size and base their study on this in order to achieve a better outcome. The qualitative research approach can better estimate the outcomes as well as the investor's behaviour.

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