DO PERSONALITY TRAITS AND CULTURAL NORMS INFLUENCE INVESTMENT DECISIONS? THE ROLE OF FINANCIAL LITERACY AND INVESTOR OVERCONFIDENCE

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ABSTRACT

Behavioral finance assumes that investors are irrational and several psychological factors, behavioral biases, and personality traits influence their investment decisions. Therefore, this study intends to examine how behavioral factors, such as personality traits and cultural norms, affect Pakistani investors' decisions while considering the moderating effect of financial literacy and the mediating role of investor overconfidence. The study used PLS-SEM for statistical analysis on a final useable sample of 396 observations obtained from surveying investors based in Karachi, Lahore, and Islamabad. Our results indicate that overconfidence, extroversion, introversion, individualism and collectivism positively affect investment decisions. Further, we found that overconfidence reduces herding bias while financial literacy moderates the relationship. The empirical results also show that overconfidence mediates the association between (i) financial literacy and herding bias and (ii) financial literacy and investment decisions. Hence, we argue that investors should enhance their financial literacy to improve their investment capabilities and skills that are imperative for unique and independent investment decisions. Investors should also become financially literate for outperforming the market and not imitate other investors. Similarly, we urge policymakers to regulate and protect investors' interests by encouraging them to enhance their financial literacy.

INTRODUCTION

Traditional theories in finance suggest that investment decisions depend on publicly and conveniently available market information (Markowitz, 1952; Fama, 1970). These theories assume that all investors are rational economic agents with access to unbiased, perfect, and relevant information prior to undertaking investment decisions (Sadiq and Amna, 2019; Fama, 1970). Contrarily, behavioral finance assumes that investors are not entirely rational, and psychological factors, behavioral biases, and personality traits influence their decisions (Kourtidis et al., 2011; Ricciardi and Simon, 2000). Further, the behavioral personality traits of individuals discourage rational decision making and adverse investment decisions (Ahmad and Shah, 2020). Behavioral theorists argue that rational investment decisions require extensive time and effort. Therefore, economic agents prefer to rely on their psychological and behavioral traits without having to analyze investment alternatives rationally (Ibbotson et al., 2018). Furthermore, it has been argued that investors extensively rely on their behavioral traits, especially in times of uncertainty (Ricciardi and Simon, 2000).

Extant literature documents that behavioral traits depend upon the investors' personality traits (such as extroversion and introversion) and cultural norms (such as individualism and collectivism) (Dhiman and Raheja, 2018). Frequently, these personality traits and cultural norms encourage investors to closely imitate other investors' investment decisions, leading to herd behavior (Kumar and Goyal, 2016; Fernández et al., 2011).

Extant literature suggests that financial literacy enhances the maturity and confidence of investors, enabling them to make independent financial decisions. Consequently, it reduces their reliance on personality traits and cultural norms for investment decision-making (Al-Tamimi and Kalli, 2009; Ngoc, 2014). Despite the abundance of research focusing on how behavioral factors influence investment decisions, several knowledge gaps exist. First, the role of financial literacy has not been examined in a behavioral finance study that analyzes how personality traits and cultural norms affect investment decisions and herding bias (Baker et al., 2019; Valcanover et al., 2020). Second, previous studies have not explored whether investor overconfidence mediates the relationship between (i) financial literacy and herding bias and (ii) financial literacy and investment decisions. Third, we found very limited research focusing on financial literacy as it is a very challenging domain due to the socio-economic dynamics and significantly low literacy rate in developing economies (Goyal and Kumar, 2021). Thus, this study examines how behavioral factors, including personality traits and cultural norms, affect Pakistani investors' decisions, given that financial literacy moderates the relationship and investor overconfidence has a mediating effect.

Based on the above discussion, this study has several contributions to the existing body of knowledge. First, this study provides novel evidence that the investor overconfidence and herding bias relationship is moderated by financial literacy.

Second, we document that investors' (i) financial literacy and herding bias and (ii) financial literacy and investment decisions are mediated by investor overconfidence. Third, this study provides a theoretical basis for investigating how financial literacy, personality traits, and cultural norms influence the investment decisions and herding bias of Southeast Asian investors.

The remaining study has several sections. Next section elaborates the theoretical foundation and develops hypotheses based on the relevant literature. The subsequent section presents the methodology by explaining the data, sampling approach, and measurement of constructs. This is followed by the results and discussion sections. Finally, the conclusion and implications are presented.

LITERATURE REVIEW
Theoretical Foundation
Economic theories suggest that agents avoid risk in their daily investment decisions. However, past studies indicate that investors undertake high risk in pursuit of high returns (Kumar and Goyal, 2016). Behavioral economists assert that environmental conditions and investors' behavioral traits significantly influence investment decisions (Perugini and Raad, 2001). Hofstede's cultural dimensions theory and the Eysenck theory of personality also support this viewpoint. The cultural dimensions theory developed by Hofstede (1980) is based on five cultural dimensions and implies that financial decisions are affected by cultural norms and values, and behavioral finance literature has used it extensively (Leonard et al., 2010; Khairullah and Khairullah, 2013). The theory contends that in an individualist culture, individuals make decisions based on self-autonomy. Individuals living in such a culture have a loosely knit society. In a collectivist society, individuals live by the norms and values of the society. Individuals in such a society are willing to sacrifice their goals to remain aligned with the family (Hofstede, 1980). Contrarily, Eysenck's (1984) personality theory underscores that the personality and intelligence of an individual are determined by genetic and biological attributes. These genetic and biological attributes influence an individual's ability to adapt in evolving circumstances. This study has developed a model that took two aspects of the Hofstede model (i.e., individualism and collectivism) and two personality traits of the Eysenck model (i.e., extroversion and introversion). The study has included these four variables as they are relevant to investment decisions. The other variables used in the study include financial literacy, herding bias, and investment decisions. The study provides theoretical support for the articulated hypotheses in the subsequent section.

Hypothesis Development
Overconfidence, Investment Decisions and Herding
Overconfidence refers to a phenomenon when investors overestimate their knowledge, skills and abilities to make sound investment decisions (Glaser et al., 2013; Tan et al., 2012; Koehler and Harvey, 2008). Overconfidence is a personality trait that directly influences investment decisions. Several studies have explored the consequences of overconfidence on investors' return (Baker and Nofsinger, 2002; Park et al., 2010), trading behavior (Odean, 1998), and investment decisions (Bakar and Yi, 2016). A consequence of overconfidence is that investors tend to underestimate the investment risk as they believe that they are capable of making effective investment decisions. Odean (1998), Shefrin and Statman (2000), and Kengatharan and Kengatharan (2014) argue that overconfident investors are likely to achieve

lower returns as compared to the market since they tend to ignore investment risk. As a result, overconfident investors fail to make rational investment decisions. Existing research provides mixed results on the association between overconfidence bias and investment decisions. For instance, Lambert et al. (2012) found a positive relationship between overconfidence bias and investment decisions. On the contrary, Ahmad and Shah (2020) report a negative association between the variables. Based on the above discussion, we develop the following hypothesis:

H1: Overconfidence has a significant positive influence on investment decisions.

Further, prior studies have found that overconfidence leads to excessive trading in stock markets as these investors believe that they have better knowledge, skills and underestimate the associated investment risk (Trinugroho and Sembel, 2011; Chuang and Lee, 2006). Further, Zaidi and Tauni (2012) argue that overconfident investors firmly believe that they have superior investment capabilities and knowledge than other investors. Thus, overconfident investors will pursue their own investment strategies and not imitate the investment strategies of other investors. In other words, overconfident investors are unlikely to follow group investment behavior as they have a strong belief in their private information, skills and trading capabilities. This implies that overconfidence is likely to reduce herd behavior. Hence, we develop the following hypothesis:

H2: Overconfidence has a significant negative influence on herding bias.

Herding and Investment Decisions
Herding is a form of group behavior by investors where an investor attempts to closely follow the trading pattern of others in the group (Nofsinger and Sias, 1999). Herding prevails in the market mainly due to information asymmetry, poor transparency, and the lack of financial literacy (Andersson et al., 2014; Jurkatis et al., 2012). Past studies suggest that herding usually occurs when investors make investment decisions based on group behavior without an in-depth analysis of the market fundamentals (Hirshleifer and Teoh, 2003; Rompotis, 2018). Moreover, investors adopting herd behavior usually ignore their instincts and follow other investors' actions. The information asymmetry problem and the lack of financial literacy encourage investors to opt for less risky investment opportunities to make a steady return from their investments. However, when many investors make similar investment decisions, these risk-averse investors tend to follow them by exhibiting herd behavior. Therefore, we argue that herd behavior is likely to increase investment activity.

H3: Herding behavior has a significant positive influence on investment decisions.

Extroversion, Introversion and Investment Decisions
Prior studies have argued that investment decisions are mainly affected by the personality traits of investors (Gambetti and Giusberti, 2019). There are two main types of investor attitudes toward risk, i.e., risk-averse and risk-taker (Dickason and Ferreira, 2018). An investor's attitude towards risk is influenced by personality traits such as introversion and extroversion (Czerwonka, 2019). Introverts are individuals that tend to have a reserved personality and they derive satisfaction from their own self (Oehler et al., 2018). Therefore, introvert investors have limited knowledge about investment avenues and hesitate to make risky investment decisions (Czerwonka, 2019). Several studies have argued that introvert investors are risk-averse and are comfortable in making conservative investment decisions. On

the contrary, extroverts are individuals that benefit from human interactions and tend to engage actively with outsiders (Czerwonka, 2019). Thus, extrovert investors usually have vast knowledge about investment opportunities and are not reluctant to invest in risky projects. Further, extrovert investors are predominantly risk-takers as they pursue higher earnings from risky investment projects (Dickason and Ferreira, 2018). Based on the above discussion, we develop the following hypotheses:

H4: Extroversion significantly affects investment decisions.
H5: Introversion significantly affects investment decisions.

Individualism, Collectivism and Investment Decisions

Hofstede (1980) has classified countries into six categories. Developed and Western countries are classified as individualistic societies, while Asian countries as collectivist nations. Despite this, a country cannot be purely collectivist or individualist. An individualist country may have a segment inclined towards collectivist behavior. Similarly, a collectivist country may have segments of the population more inclined to individualist behavior. Pakistan, for example, is considered a collectivist society, but it has segments inclined toward collective behavior. In a collectivist society, individuals' attitudes and behavior are influenced by family, friends, and peers. Individuals in such societies sacrifice their personal preferences and behave according to family and peer expectations (Triandis, 2001). On the contrary, individualist behavior promotes decision-making based on the preferences of the individuals rather than family and peers (Triandis, 2001).

H6: Individualism has a significant positive influence on investment decisions.
H7: Collectivism has a significant positive influence on investment decisions.

Financial Literacy, Overconfidence, Herding, and Investment Decisions

Reliable and accurate information helps in efficient decision-making (Raju et al., 1995). Similarly, for efficient financial decision-making, an investor requires reliable information about financial markets and investment opportunities (Huhmann and McQuitty, 2009). In the behavioral finance literature, the knowledge and skills required to appraise investment opportunities and make shrewd investment decisions are referred to as financial literacy (Mandell, 2008; Lusardi and Mitchell, 2011). As discussed above, several personality traits, such as overconfidence, affect investment decisions. Consequently, overconfident investors usually underestimate investment risk as they have conviction in their investment capabilities (Kengatharan and Kengatharan, 2014). This also implies that overconfident investors will not be swayed by the investment decisions of other investors and are not likely to adopt herd behavior. Thus, we argue that overconfident investors who are financially literate will have more faith in their skills and investment capabilities, reducing the chances of adopting herd behavior.

H8: The negative influence of overconfidence on herding bias is moderated by financial literacy.

Past studies have found that due to the lack of financial literacy, investors tend to either shy away from investing in the stock market or imitate the investment pattern of other market participants (Van Rooij et al., 2011; Mouna and Anis, 2017). On the contrary, financial literacy will give investors' confidence in their skills and investment capabilities, encouraging them to participate in financial markets and make independent financial decisions

(Chuang and Lee, 2006). Consequently, these overconfident investors will not imitate group behavior while investing in financial markets. Past studies have found that overconfident investors will actively participate in financial markets, thereby increasing the overall trading volume (Chuang and Lee, 2006). Therefore, we develop the following hypotheses:

H9: The influence of financial literacy on herding bias is mediated by overconfidence.
H10: The influence of financial literacy on investment decisions is mediated by overconfidence.

METHODOLOGY

Population and Sample Data

The study aims to analyze how investment decisions are affected by investors' behavioral factors, such as personality traits and cultural norms. The study collected data by surveying a group of active investors trading in equities listed on the Pakistan Stock Exchange using the convenience sampling method. We targeted investors based in three major metropolitan cities of Pakistan, i.e., Karachi, Lahore, and Islamabad. The study selected these major cities since the most active investors trading at the Pakistan Stock Exchange are based in these cities. Before 2016, there were three stock exchanges in Pakistan. After a successful demutualization on 11th January 2016, the Pakistan Stock Exchange (PSX) was formed. Thus, the investors residing in Karachi, Lahore, and Islamabad provide a good representation of equity investors in Pakistan.

The active investors were identified by liaising with prominent brokerage houses with branches in Karachi, Lahore, and Islamabad. The brokerage houses provided us with the contact information of their most active investors. Consequently, we prepared a list of 675 active investors to whom we distributed the questionnaires. We received 437 responses constituting a response rate of 64.74%. After scrutiny, we found 29 incomplete questionnaires leaving us with 408 useable responses. Subsequently, we screened the data for outliers as they potentially distort the statistical results significantly. The study used Cook's distance approach to identify outliers and dropped 12 observations with a Cook's distance greater than 1. This resulted in a final sample of 396 observations, comprising 192 responses from investors in Karachi, 107 from Lahore, and 97 from Islamabad. Thus, investors from Karachi comprised nearly 48.48% of the sample, followed by 27.02% from Lahore and 24.49% from Islamabad. The final sample had skewness and kurtosis values below ±3, respectively. Following Brown (2015) recommendation, we concluded that the sample follows the normal distribution, which we can use for further statistical analysis.

Variable Measurements

The study used a carefully designed questionnaire that was distributed to active equity investors in Pakistan. The questionnaire aimed to ascertain the demographic characteristics of the sampled investors, followed by questions related to their personality attributes, cultural norms, and investment decisions. The demographics part intended to acquire information related to the respondents' characteristics, such as age, marital status, and gender. Further, the questions related to the constructs were based on the Likert scale with five points. Before administering the questionnaire for data collection, we pre-tested it on 75 active and experienced investors that trade in Pakistani equities regularly. In addition, we ascertained the reliability of items through exploratory factor analysis. All constructs used in the

study had adequate reliability and internal consistency measures, with Cronbach alpha values exceeding 0.8.

The study measured the constructs by adopting the instrument from previous studies. The extroversion and introversion variables were measured through a scale by Eysenck and Eysenck (1992). The scales of extroversion and introversion had six items with reliability values in previous studies ranging from 0.730 to 0.802 and 0.740 to 0.810 respectively. Similarly, the overconfidence construct had four items, while herding bias had seven items measured using a scale from Ainia and Lutfi (2019) and Kengatharan and Kengatharan (2014), respectively. The Cronbach alpha values of the overconfidence and herding bias vary between 0.750-0.820 and 0.741-0.780, respectively. Further, we used four items for measuring each construct, i.e., individualism, collectivism, financial literacy, and investment decisions, following previous studies by Triandis (2001), Al-Tamimi and Kalli (2009), and Waweru et al. (2008). The reliability

values of these instruments have exceeded 0.70 in previous studies. Table 1 summarizes the constructs used, the number of items, and the reliability values reported in the previous studies.

Statistical Analysis

The Smart PLS software was used for descriptive and inferential statistical analysis. The Smart PLS software is commonly used for estimating complex models and has better capabilities for analyzing moderating and mediating relationships between variables. Following Hair et al. (2010) approach, we applied PLS-SEM for statistical inference and validation of the developed hypotheses. First, we estimated the measurement model to analyze the association between the latent variables and their measures. Second, the structural model was estimated to determine the path coefficients for empirically assessing the developed hypotheses.

Table 1. Constructs, items and reliability.

Constructs	Items	Cronbach alpha in Past Studies
Overconfidence	4	0.750 to 0.820
Herding Bias	7	0.741 to 0.780
Financial Literacy	4	0.770 to 0.795
Extroversion	6	0.730 to 0.802
Introversion	6	0.740 to 0.810
Individualism	4	0.753 to 0.770
Collectivism	4	0.760 to 0.790
Investment Decisions	4	0.987 to 0.887

RESULTS AND DISCUSSION
Descriptive Analysis

The descriptive analysis examined the internal consistency and normality of the variables. The summarized results are depicted in Table 2. We ascertained the reliability of the variables through Cronbach alpha. Table 2 suggests that the Cronbach alpha values for the variables ranged between 0.701-0.894. Thus, as suggested by Hair et al. (1998), all the variables have acceptable reliability. Further, the results suggest that the highest Cronbach's alpha value is for extroversion (α=0.894), and the lowest is for financial literacy (α=0.701). Similarly, Table 2 shows that the mean values of the constructs vary from 3.56 to 4.46, with the lowest for investment decisions (Mean=3.560, SD=0.893, α=0.864) and the highest for individualism (Mean=4.460, SD=1.241, α=0.843). In addition, we attempted to assess the normality of the constructs through the Skewness and Kurtosis values. Table 2 indicates that the Skewness values range from -1.307 to 2.329, and the Kurtosis values range from -2.879 to 2.933. Brown (2015) suggests that if the skewness values lie between ±3 and the kurtosis values lie between ±10, the constructs exhibit normality. The results indicate that as the skewness and kurtosis values of the constructs lie between this range, the constructs follow the normal distribution.

Convergent and Discriminant Validity

There are two approaches commonly used in the literature to ascertain the validity of the constructs, i.e. convergent and discriminant validity. To ascertain whether the constructs have convergent validity, we have used the composite reliability (CR) and average variance extracted (AVE) values which are reported in Table 3. Further, we ascertained the discriminant validity through the square root of the variables AVE and their correlations, which are reported in Table 4. The results presented in Table 3 indicate that the composite reliability values of our construct range from 0.834 to 0.919. As suggested by Bagozzi and Yi (1988), if the composite reliability values exceed 0.6, it suggests that the constructs have convergent validity. As our composite reliability

values exceed the minimum requirement of 0.6, we infer that the constructs meet the convergent validity requirement. Further, Hair et al. (1998) recommends that the values of AVE should be greater than or equal to 0.5 to meet the convergent validity requirement. Table 3 indicates that the AVE values significantly exceed 0.5, the variables satisfy the convergent validity requirements. In addition, Table 4 indicates that the diagonal values in bold font are the square root of AVE. According to Hair et al. (2010), if the diagonal values representing the square root of AVE exceed the reported correlations, then the discriminant validity requirements would be fulfilled. As the square root values exceed the correlations, it suggests that the constructs fulfill the discriminant validity requirement. Further, as advised by Hair et al. (2010), none of the correlations exceed 0.9, which reinforces the view that constructs possess discriminant validity.

Predictive Power

The study has assessed the model's predictive power based on R-squared, Adjusted R-squared, and Q-squared values presented in Table 5. The R-squared values exceed 0.20, and Q-squared values exceed 0.10, suggesting that the measurement model has adequate predictive power.

Model Fit Indices

The model fit indices are presented in Table 6. According to Hu and Bentler (1999), the standardized root mean square residual (SRMR) value of the model should be less than 0.1. The results indicate that the SRMR value is less than 0.1, which suggests that the model has a good fit. Further, the normed fit index (NFI) lies between 0 and 1; the closer the NFI to 1, the better the model fit (Bentler and Bonett, 1980; Lohmöller, 1989). If the NFI exceeds 0.9, then the model is considered to have a good fit; the results in Table 6 indicate that our model has an acceptable fit as NFI is greater than 0.9. In addition, the chi-square value is very large, which indicates that the model is significant and has a good fit. Overall, all the fit indices suggest that our models have an acceptable fit.

Table 2. Descriptive statistics.

Variables	Cronbach Alpha	Mean	Std. Dev	Skewness	Kurtosis
Overconfidence	0.794	3.700	1.117	1.924	2.664
Herding Bias	0.795	3.640	1.231	2.329	-1.823
Financial Literacy	0.701	3.710	0.900	-1.307	2.259
Extroversion	0.894	4.210	1.336	1.808	2.141
Introversion	0.835	4.360	0.858	-1.306	-2.879
Collectivism	0.857	3.950	0.938	1.550	1.887
Individualism	0.843	4.460	1.241	1.323	2.933
Investment Decisions	0.864	3.560	0.893	1.663	2.735

Table 3. Convergent validity.

Variables	rho_A	CR	AVE
Overconfidence	0.80	0.867	0.621
Herding Bias	0.799	0.867	0.621
Financial Literacy	0.703	0.834	0.626
Extroversion	0.895	0.919	0.654
Introversion	0.841	0.889	0.668
Collectivism	0.859	0.898	0.638
Individualism	0.849	0.894	0.679
Investment Decisions	0.866	0.902	0.648

Table 4. Discriminant validity.

Variables	CL	EXT	FL	HB	IND	INT	ID	OC
Collectivism	0.799							
Extroversion	0.606	0.809						
Financial Literacy	0.588	0.391	0.791					
Herding Bias	0.586	0.742	0.398	0.788				
Individualism	0.335	0.383	0.268	0.386	0.824			
Introversion	0.448	0.494	0.299	0.627	0.358	0.817		
Investment Decisions	0.728	0.627	0.578	0.621	0.387	0.51	0.805	
Overconfidence	0.671	0.634	0.462	0.735	0.346	0.562	0.751	0.788

Table 5. R-squared, adjusted R-squared and Q-squared.

Variables	R-squared	Adjusted R-squared	Q-squared
Herding Bias	0.545	0.544	0.332
Investment Decisions	0.764	0.763	0.490
Overconfidence	0.214	0.213	0.127

Table 6. Model fit indices.

Statistics	Saturated Model	Estimated Model
SRMR	0.077	0.078
d_ULS	3.219	16.14
d_G	1.181	1.547
Chi-Square	7958.214	9037.856
NFI	0.918	0.920

PLS-SEM Results

The results reported in Table 7 were obtained from estimating the model using PLS-SEM with bootstrapping. The table provides the path coefficients, t-statistics, and the associated p-values. The results will form the basis for testing all the direct and indirect hypotheses. Further, the measurement model is provided in Figure 1, while the structural model is presented in Figure 2. The results in Table 7 suggest that six direct hypotheses were accepted, while one was rejected. The results suggest that overconfidence (β=0.059, p<0.01), extroversion (β=0.071, p<0.01), introversion (β=0.055, p<0.05), individualism (β=0.330, p<0.01) and collectivism (β=0.537, p<0.01) have a positive relationship with investment decisions.

Thus, we find support for H1, H4, H5, H6 and H7. In addition, the results indicate that overconfidence (β=-0.318, p<0.01) has a negative impact on herding bias, which supports H2. On the contrary, herding bias (β=-0.037, p>0.05) has an insignificant relationship with investment decisions. Therefore, H3 is not supported. Moreover, all three indirect hypotheses (i.e., the moderating and mediating hypotheses) were accepted. The results indicate that financial literacy has a moderating effect on the relationship between overconfidence and herding bias (β=0.115, p<0.01). Similarly, overconfidence mediates the association between (i) financial literacy and herding bias (β=0.085, p<0.01) and (ii) financial literacy and investment decisions (β=0.016, p<0.01).

Table 7. PLS-SEM results.

| Direct Hypotheses	Path Coefficients	t-statistics	p-values	Decision
Overconfidence -> Investment Decisions (H1)	0.059	3.543	0.000	Accepted
Overconfidence -> Herding Bias (H2)	- 0.318	10.914	0.000	Accepted
Herding Bias -> Investment Decisions (H3)	- 0.037	1.290	0.221	Rejected
Extroversion -> Investment Decisions (H4)	0.071	3.301	0.002	Accepted
Introversion -> Investment Decisions (H5)	0.055	2.710	0.015	Accepted
Individualism -> Investment Decisions (H6)	0.330	12.667	0.000	Accepted
Collectivism -> Investment Decisions (H7)	0.537	24.655	0.000	Accepted
Indirect Hypotheses				
Overconfidence*Financial Literacy -> Herding Bias (H8) (Moderating)	0.115	5.353	0.000	Accepted
Financial Literacy ->Overconfidence-> Herding Bias (H9)	0.085	7.052	0.000	Accepted
Financial Literacy ->Overconfidence-> Investment Decisions (H10)	0.016	3.219	0.001	Accepted
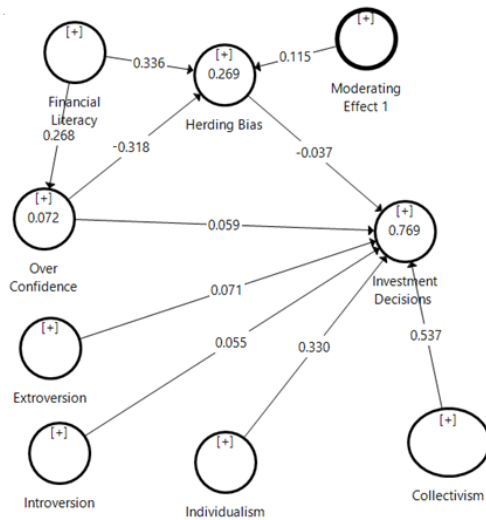
Figure 1. Measurement model.
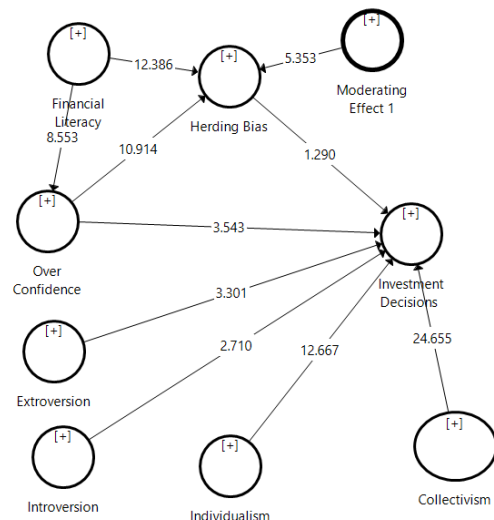
Figure 2. Structural model.

Discussion

The study's objective is to examine how investment decisions are affected by investors' behavioral factors, such as personality traits and cultural norms while considering the moderating effect of financial literacy and the mediating role of investor overconfidence. Consequently, we developed ten hypotheses, including seven direct and three indirect hypotheses. Our PLS-SEM results reported in Table 7 suggest that six direct and three indirect hypotheses are supported. On the contrary, the study does not support one direct hypothesis, i.e., an association between herding bias and investment decisions. This section provides a discussion of results in light of the previous literature. The results indicate that overconfidence has a significant positive effect on investment decisions but a significant negative effect on herding bias. Further, we find that herding bias does not have a significant effect on investment decisions. These results support H1 and H2 and are consistent with the existing literature (Tan et al., 2012; Bakar and Yi, 2016; Zaidi and Tauni, 2012; Ahmad and Wu, 2022). As overconfident investors overestimate their knowledge and investment skills, therefore, they are likely to make active investment decisions. Similarly, these overconfident investors will develop their own investment strategies and not follow other investors. Hence, they will reduce herd behavior.

Further, we find evidence that extroversion and introversion have a positive and significant impact on investment decisions, i.e., our results support H4 and H5. The results are consistent with earlier studies (Gambetti and Giusberti, 2019). The results suggest that

investors with introvert and extrovert personality traits will undertake investment decisions (Czerwonka, 2019). However, prior studies suggest that these personality traits will affect investment decisions differently (Dickason and Ferreira, 2018). Introvert investors usually have a reserved personality and do not discuss their investment options with others. These introvert investors also have limited knowledge and investing skills. Hence, they will tend to make prudent and safe investment decisions. On the contrary, extrovert investors usually have greater awareness and knowledge of investment opportunities as they extensively interact with other investors. Thus, extrovert investors are likely to undertake risky investment decisions. Similarly, we find that individualism and collectivism personality traits have a positive and significant impact on investment decisions, supporting H6 and H7. Our results support the view that investors with individualist and collectivist personality traits will make investment decisions (Triandis, 2001). Individualist investors will usually make investment decisions based on their individual ideas and knowledge, while collectivist investors' decisions will be influenced by the advice of family members and peers.

The PLS-SEM results also support our indirect hypotheses, i.e., H8, H9, and H10. We find novel evidence that financial literacy moderates the association between overconfidence and herding bias. Thus, we argue that overconfident investors with adequate financial literacy usually have more faith in their skills and investment capabilities, which ultimately reduces the chances of exhibiting herd behavior. In addition, we report unique evidence that overconfidence mediates the relationship between (i)

financial literacy and herding bias and (ii) financial literacy and investment decisions. This is mainly because financial literacy will encourage investors to become confident in their skills and investment capabilities which will reduce the likelihood of herding but increase investment activities in the market.

CONCLUSIONS AND IMPLICATIONS

The study analyzes whether personality traits and cultural norms affect investors' decisions in Pakistan. In addition, we investigate the moderating effect of financial literacy and the mediating role of investor overconfidence. The statistical results from PLS-SEM suggest that overconfidence, extroversion, introversion, individualism and collectivism positively influence investment decisions. Further, we found that overconfidence reduces herding bias while financial literacy moderates this relationship. The mediation analysis suggests that overconfidence mediates the association between (i) financial literacy and herding bias and (ii) financial literacy and investment decisions.

This study has several implications. First, we extended Hofstede's (1980) cultural dimensions and Eysenck's (1984) theory of personality by applying them to behavioral finance to explain how cultural norms and personality traits influence investment decisions. Second, our results imply that investors should enhance their financial literacy to improve their investment capabilities and skills that will enable them to make unique and independent investment decisions. Third, investors should become financially literate to enhance their self-confidence, empowering them to make creative investment decisions and not imitate other investors. Creative investment decisions may also enable financially literate investors to outperform other investors. Fourth, policymakers may be better able to regulate and protect investors' interests by encouraging them to enhance their financial literacy to undertake independent financial decisions.

However, the study has some limitations, such as our results can only be generalized in a similar context and the use of limited variables for personality traits and cultural norms. Future research may explore how personality traits and cultural norms affect rational or irrational investment decisions and herding bias in the context of other emerging economies.

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