
The Relationship among Overconfidence, Economic Expectation, Social Factors and Investment Decision Making Behavior with the Mediating and Moderating Effects

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Abstract: The current study investigates the relationship among the overconfidence (OVC), economic expectations (EE), social factors (SOF) and investment decision making behavior (IDMB) with the mediating and moderating effect. The data was collected from the investors of Pakistan Stock Exchange (PSX) that were selected through convenience sampling technique. The results of Structural Equation Modeling (SEM) showed that OVC, EE, SOF have a positive and significant relationship with IDMB. On the other hand, OVC, EE, SOF also has a positive and significant relationship with the information search (IS) while IS did not have direct effect on the IDMC. In other words, the IS also did not have mediating effect among the relationship of OVC, EE, SOF and IDMB. The indirect effect further indicated that financial literacy (FL) has a significant moderating effect among the relationship of OVC, EE, SOF and IDMC. Therefore, this moderating effect could be considered a contributions of the study. The research limitations and future directions had also discussed at the end of the study.

Keywords: overconfidence, economic expectations, social factors, investment decision making behavior, information search, financial literacy, Pakistan stock exchange

INTRODUCTION

It is observed that human beings are referred to make decisions on the basis of vast experience and intuition, instead of relying on available information. With the passage of time, decision-making powers encourage them to make better and prolific decisions. Hence, every businessman feels fascinated and confident with their investment decisions and practical steps so as to judge their abilities in right directions, simply by analyzing their prolific outcomes.. The traditional finance theories such as Modern Portfolio Theory (MPT) and Efficient Market Hypotheses (EMH) adopted by Markowitz (1952) and Fama (1970) respectively, assume that individual investors are rational as well as risk averse. However, they prefer lower risks instead of higher risks at some given level of return. Therefore, it is obvious that traditional financial theories assume that individual investors are considered as rational beings (Shah, Ahmad & Mahmood, 2018).

On the other hand, many factors like past experiences, emotions, beliefs, etc. create negative impact on investment decisions, leading investors to illogical reactions during critical situations. In order to explore the unexpected impact of such factors on investors decisions, a new field known as “Behavioral Finance”, gradually emerged. It integrates traditional finance theories and economics theories to clarify the critical reasons as to why investors’ investment choices are irrational, in present times (Combrink & Lew, 2019). The behavior finance in the emerging approach transacts with behavioral factors (both internal and external) so as to influence investors’ decisions on financial choices.

Hence, the current study purpose is to investigate the relationship among the overconfidence, economic expectation, social factors and investment decision making behaviors along with the moderating and mediating variables. Investment decisions are now considered as routine activities and investors intend to explore those factors which provide accurate timely decisions. Nearly all researches conducted earlier attempted to search regarding investors behavior regarding information search (Rana, Khan, & Baig, 2014), whereas only few studies explored information search behavior as mediator between different traits and decision-making behavior. Moreover, most of the previous studies have a direct relationship (Gill, Khurshid, Mahmood, & Ali, 2018; Islamoğlu, Apan, & Ayvali, 2015; Obamuyi, 2013; Shanmugham & Ramya, 2012). This shows that there is a need of research in other context. Along with the gap, financial literacy has used as moderating variable and information search as a mediating variable in the current study. Moreover, our study would also contribute contextually in line with earlier study of Shah, Ahmad and Mahmood (2018), since most developing countries,

including Pakistan, the market fundamentals are quite different from developed countries. Even the thinking levels of Pakistani investors would also obviously vary from the investors in developed countries.

Theoretical Literature & Conceptual Framework

Kahneman and Tversky (1979) attempted to explain the ‘**Prospect theory**’ to posit that people make investment decisions on the basis of gains and losses, instead of relying on final outcomes and set reference points accordingly as well. The gains and losses are valued by investors from different angles. This value is obviously being calculated from the reference point set earlier. Prospect theory focuses on subjective decision making that is influenced by the investor value system and explains several states of mind that influence individual decision-making processes including regret aversion, loss aversion, and mental accounting (Waweru, Munyoki & Uliana, 2008; Ratnadi, Widanaputr & Putra, 2020).

According to the Heuristics theory, decision makers use heuristics in investments to avoid risk of losses in uncertain situations since heuristics are rules of the thumb. Hence, decision makers use heuristics in complex situations and uncertain conditions for instant and easy decisions (Brabazon, 2000; Ritter, 2003). It is activated by reducing the complexity of measuring probabilities and forecasting values to simpler judgments (Kahneman and Tversky, 1974). Moreover, heuristics act as a useful resource to allow human beings to take up speedy decisions, as compared to rationally processing through available information. Generally, heuristics are more beneficial and quite useful when time for decision-making is limited (Waweru et al., 2008), but often these heuristics lead to critical biases (Kahneman and Tversky, 1974; Ritter, 2003). All heuristics are considered to be in some form of effort reduction, using just one or more of the following factors, like ‘analyzing only a few clues’, ‘integrating less information’, or ‘simply analyzing only a few alternatives’ (Shah and Oppenheimer, 2008).

The ‘rational expectations theory’ was initially presented by Muth (1961), specifying it as a clear concept on investment decisions. Being well supported by their experience, rational vantage point, and adequate knowledge available at hand, investors make viable decisions. Robert Lucas, renowned economist from United States further explored the theory for more conceptualization, revealing the economy’s condition accordingly. Though the concept scraps the prevailing viewpoint that government policies affect investor’s decisions, it could still be predicted that government will accept them, in near future. The concept ultimately shows that investors are inclined to go for current economic priorities to decide on the basis of such rational expectations (Muth, 1961).

Information Search

Information search is an essential aspect for investment decision in any product as it minimizes expected risk (Fodness & Murray, 1997; Lin, 2002). Since financial products are changing rapidly, timely information search is as a necessity. There is no doubt that investments have potentials to increase individual wealth but investors may face financial losses attribute to risk. However, investment risk could be minimized when proper information on markets is adequately acquired in a timely manner and well manage accordingly. Various theories have evolved so as to minimize risks in decisions on investment planning, including plans to explore sources for maximum market information, etc. (Taylor, 1974). As a natural phenomenon, operational aspects along with financial factors and growth potential of stock and products are well considered by rational investors, especially institutional investors. Although investors make personal attempts to collect as much information on their own, possibilities to attain information through digital search exists or generally in searches provided by professional advisers (Baker & Nofsinger, 2002; Loibl & Hira, 2009).

While studying the mediating role of information searches between earnings and behavior of making investment decisions, Rana et al. (2014) found that heuristics and education had positive and significant impact on investment decisions in Pakistan. It was also concluded from another study that rich investors were more inclined towards acquiring vast and healthy information from financial experts, whereas the poorer ones remained helpless (Lin, 2002). Similarly, many different results had been found in other studies, showing the effect of information search in US on the differences in investors decisions, their individual characteristics and demographic features (Sitkin & Weingart, 1995). Thi study concluded that some risk behavior model with any mediation is better than the model wherein the individual impact of many variables is considered and determined separately.

Over-Confidence Bias

In literary terms, ‘bias’ refers to apparent inclination towards one person or thing or complete disliking towards others, whereas in financial terms, ‘bias’ is taken as attitudinal tendency of investors to make investment decisions in firms and stock markets, setting aside their association with previous endeavour. Their biased attitudes obviously tend to show the role of ‘bias’ in deforming their minds (Doukas & Petmezas, 2007). So far researchers have explored many types of ‘biases’, whereas our study will focus mainly on ‘over-confidence bias’. ‘Confidence’ refers to self-assurance, attributed with one’s own abilities and skills towards decision-

making and depicting his/her internal feelings (Qasim, Hussain, Mehboob, & Arshad, 2019). Some typical ways, unique manners and discriminatory attitudes provide 'over-confidence' to overcome critical situations. To be more precise, 'over-confident' persons show extraordinary confidence than shown by normal persons or required in normal situations by displaying outstanding skills and exceptional knowledge (Riaz, Ahmed, Parkash, & Ahmad, 2020; Scott, Stumpp, & Xu, 2003).

Bakar and Yi (2016) conducted a study and found out that over-confidence bias showed a significant impact on investors' decision-making. whereas Park et. al. (2010) studied the impact of confirmation and over-confidence in investors and precisely found its negative influence on their returns. However, Trinugroho and Sembel (2011) argued to prove that over-confident investors traded excessively, attempting to show their belief and confidence in their own skills and knowledge. Consequently, these traders acquired lower returns from their investments than other investors. Bashir et al. (2013) concluded that over-confidence bias had impacted the investors' financial decisions. The market efficiency and overconfidence of investors showed significant and positive association (Shah, Raza, & Khurshid, 2013).

Over-confident investors decide on their own free-will and assume that investment decisions taken by others could be attributed to emotions, circumstances, and perceptions. Their over-confident attitude fully supports their concept and leads them to consider the options and suggestions of others as illogical and anesthetic. Assuming risk to be an integral part of their financial planning, over-confident traders care little about the risk level, and trade excessively with over-confidence, which may not always be a negative phenomenon. However, critics claim that continuous practice of over-confidence leads towards more trading activities, since it tends to reduce market efficiency (Rachmatullah & Ha, 2019). As mentioned earlier, over-confident traders care less to look into risky aspects, they over-value expected returns, without paying any heed to market realism. On the contrary, another group assumes that market efficiency flourishes due to over-confidence bias, turning into a source of information accumulation. Some experts even provide different opinions on impact of over-confidence bias in market efficiency, guiding researchers to probe into the controversial subject. Our research attempts to determine the importance of over-confidence in investment decisions and its obvious relationship with information search (Testa et al., 2020).

Economic Expectations

The term 'economic expectations' provides predictions regarding firm's expected economic performance during some stipulated periods, like a month, year, decade, etc. It plays prominent roles in trading and investment decisions, being mainly concerned with firm's future net income and country's overall economic growth. The forecast expectations may consist of various anticipated levels related to employment, production, financial gains/losses, inflation rate, balance of trade, firm's expansion tendency, and its expected risk. Some factors which financially affect investment decisions in firms are: (i) past performance, (ii) anticipated raise in capital (iii) bonus, (iv) dividend distribution plans and, (v) predicted profits. Along with firm's significant products, economic features and social aspects of investors, like gender, age, education level, marital status, and experience in investment, makes them to decide accordingly (Obamuyi, 2013).

Social Factors

Media is the real key factor which influences investment decisions of individuals with two important roles. Firstly, media sets the environment for various stages of marketing and secondly, media itself persuades these moves accordingly (Bond, Cummins, Eberly, & Shiller, 2000). It was noted well by Baker and Nofsinger (2002) that media instigates traders to follow its stories and trigger opinions, and even magnifies marketing responses as news coverage, keeping them away from actual formal analyses on investment. Bond et al. (2000) also introduced the term 'attention cascade' to show that media intends to keep investors' focused on specific topics for much longer periods. Surprisingly, the term contributed towards speculative blowups in some cases in stock markets. The role of media in developing market movements had been confirmed by (Davis, 2006). During times of extreme market crisis, media tries to push trading activities towards very extreme levels.

A significant influence of social factors on trading activities and stock returns among individual investors was adequately shown by (Shive, 2010). Using the data acquired from Finland's 20 most-traded stocks between 1995 and 2003, he examined trading capacity of individual investors to conclude the results. Since social trading proved to be economically sound, traders indicated motivational attitude so as to predict stock returns without any reverse effects, showing useful information sharing among individuals. With the passage of time Individuals tend to be less hypersensitive to social influence, and thus, the number of trades increased gradually in the sample period.

'Internet' provides useful means for electronic commerce besides facilitating the sharing of informative knowledge with others, through chat rooms and discussion rooms. Individuals are provided best opportunities to share and discuss their subject of interest besides the exchange of views and opinions. Barber and Odean (2001) presented useful documents to show that gradual technological developments in the Internet sphere affected investor's choices and financial markets, as well. An interesting research undertaken by Arwinder,

Sandhu, and Kundu (2010) attempted to show that investors adopting stock trading through Internet, reacted altogether differently from non-adopters. The conclusion pointed out that demographic variables played effective roles in contributing significantly to classify investors into two groups, i.e. adopters and non-adopters of trading stock through Internet or vice versa. They ultimately evolved that senile, experienced, mature businessmen-like investors availed very less Internet stock trading facilities as compared to other group in the opposite category, i.e., young, immature, less experienced and non-businessmen like individuals.

Financial Literacy

The term 'Financial Literacy' has been described variably by many authors. Firstly, as suggested by Fachrudin and Fachrudin (2016) it describes the art of using your money appropriately in investments, savings, insurance, budgeting, etc. Secondly, it refers to one's capabilities to adopt best financial concepts comprehensively (Servon & Kaestner, 2008). Thirdly, financial literacy represents personal abilities of investors to acquire sufficient and authentic information to analyze and manage financial conditions accordingly. Moreover, it also involves every human tendency to seek best financial options, discuss financial issues and resolve monetary situations for future plans, generally including life events and particularly visualizing the economic activities.

Financially literate and well-informed investors use appropriate and befitting techniques at the time of making decisions for investment (Al-Tamimi and Kalli, 2009). They ignore and usually avoid inadequate information and look towards relevant information to process further for investment analysis (Jain et al., 2015). Hayat and Anwar (2016) attempted to prove that precise financial knowledge also affects the risk-taking capacity of investors, because financial literacy tends to decline the risk-opposing tendency of individual investors. Hence, appropriate financial knowledge even provides multiple approaches in handling risky situations (Almenberg and Dreber, 2015). On the contrary, individuals with less financial information apparently seem to get confused while making financial decisions and obviously get indulged and trapped in behaviour biases (Disney and Gathergood, 2013). Therefore, financial literacy provides stronger sources of empowerment to investors in increasing their own decision-making capability during the processing and analyzing of information in adequate and proper manner (Hayat and Anwar, 2016; Sabir, Mohammad & Shahar 2019).

Some of its cases were explored by Vitt et al. (2000); Cude et al. (2006); Al-Tamimi (2009), who found financial literacy below the requisite level among investors of United Arab Emirates (UAE). But those, who had attained higher education provided better results in investing choices, besides exhibiting significant relationship between financial literacy and investment decisions. Similarly, De Visser, Korets, and Coussens (2005) stated that financial literacy represents the celestial point of access to finances, education, and comprehension, whereas individual 's interest, practice and attitude directly benefit their financial efficiency, which in turn, ultimately benefits the society and the country at large. Lusardi and Mitchell (2007) evolved that level of financial literacy was found to be lower among women, parents, and those persons with less education. Even later, Lusardi and Mitchell (2017) rightly analyzed to show financial literacy leading investors to be familiar with the most basic concepts of economic theories, necessarily needed for suitable savings and appropriate investment decisions. Their studies explicitly clarified that 'numeracy' (another part of financial literacy) represents its tests. Lusardi (2008) went further on to stress on 'debt literacy' (integral part of financial literacy). Their definition of 'debt literacy' was the tendency of investors towards simple decisions in debt contracts, particularly towards basic knowledge in compound interest, measured within the context of every-day choices.

Bernheim and Garrett (2003) revealed in their research that financial literacy affects education, representing thriftier life. On the contrary, Chen and Volpe (2002) indicated that no noticeable differences existed on age, education, experience, gender and income, in this respect. According to Kimball and Shumway (2006), decision to buy shares is attributed to lower levels of financial literacy, whereas (Ahmad & Bin Mohammad, 2019; Van Rooij, Lusardi, & Alessie, 2011) explored disliking of investors with lower level of financial literacy to invest in any stock.

Makki and Lodhi (2014) attempted to conclude that financial literacy and accounting information showed quite significant effects in lowering its adequate and precise asymmetry, and tempt investors to instigate their investments into and risky endeavors. The authors also explored and verified that preference in investors towards risky investments in Pakistan, showed descending trends with increasing experience and age.

The review of literature in our study reveals that investor investment decisions are not apparently rational. Many internal and external factors mostly influence their investment decisions. However, only few studies have attempted to examine whether mediating effects of these variables on decision-making behavior are possible in information search or separately influence investment decision making. In light of these facts, our research is an attempt to explore and examine the mediating effects of information searches on investment by investors' decision-making behavior through the analyses acquired from a well-conducted and planned survey.

Based on the above literature, the research framework of the current study is formulated. In the current framework, overconfidence, economic expectation, social factors are independent variables while information search is a mediating variable, financial literacy is a moderating variable and investment decision making

behavior is a dependent variable. These following variables are predicted in the following Figure 1.

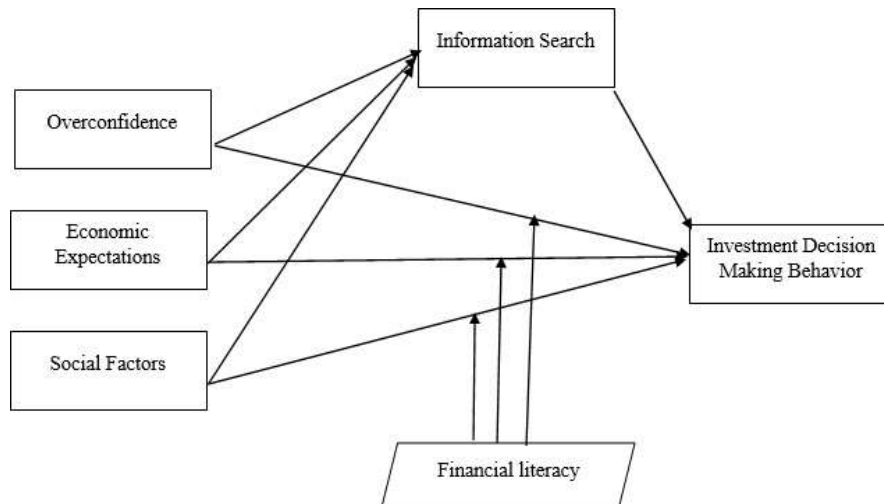


Fig.1: Research Framework

Based on above discussions, it is hypothesized that:

- H1:** The overconfidence has a significant relation with the investment decision making behavior.
- H2:** The economic expectations have a significant relation with the investment decision making behavior.
- H3:** The social factors have a significant relation with the investment decision making behavior.
- H4:** The overconfidence has a significant relation with the information search.
- H5:** The economic expectations have a significant relation with the information search.
- H6:** The social factors have a significant relation with the information search.
- H7:** Information search has a significant relation with the investment decision behavior.
- H8:** The Information search mediates the relationship of overconfidence and investment decision making behavior.
- H9:** The Information search mediates the relationship of over expectations and investment decision making behavior.
- H10:** The Information search mediates the relationship of social factors and investment decision making behavior.
- H11:** The financial literacy moderates the relationship of overconfidence and investment decision making behavior.
- H12:** The financial literacy moderates the relationship of over expectations and investment decision making behavior.
- H13:** The financial literacy moderates the relationship of social factors and investment decision making behavior.

Research Methodology

For the purpose of data collection, this study has carried out a self-administrative questionnaire. For the easy understanding, questionnaire was accompanied with the cover later, some information about the variables (whose items were added in the questionnaire), and overall research objective of the study. The developed questionnaire was online distributed to the targeted respondents of Pakistan Stock Exchange (PSX) investors. Overall, there were overall 425 questionnaires which were distributed among the respondents of the study. Table 1 provides the overall information about the number of the questionnaires being distributed, total returned questionnaire and finally total useable questionnaire along with their percentage rate.

Table 1: Sample Study Response Rate

Details of the Questionnaires	Frequency	Rate
Number of Questionnaire distributed	425	100%
Returned questionnaire	298	70.11%
Useable questions	290	68.23 %

Source: Researcher Own Illustration

Descriptive statistics were calculated using the SPSS-23. Such analyses provide the information regarding the trends in each items of the model through measure of central tendency and measure of dispersion. For central

tendency, the most common measure is Mean score of the responses, whereas measure of dispersion shows the deviation from the mean trend through the calculation of standard deviation of the respondents. The descriptive findings of the study, considering the each of the variable. The mean score for all the overconfidence (OVC) is near to 3.33 showing a moderate level of responses by the respondents. However, information search (IS) is showing a mean statistic of 2.85 with the standard deviation of 0.967. For the economic expectations (EE) had a mean value 3.78 that show a above moderate level and social factors had a 3.34 mean vale that also a greater from the moderate level. In addition, the mean value of financial literacy (FL) is 2.98 that is near to moderate level. Lastly, the mean value of investment decision making behavior (IDMC) is 3.85 that is also a greater than the moderate level. Besides the range for each of the items of both exogenous, mediator moderator, and dependent variable is 1-5, providing the fact that respondents have gone through from all the points over Likert Scale as mentioned in the questionnaire.

Inferential Analysis

After providing the descriptive findings, present section is covering the discussion about the factor analysis, testing of the hypotheses, analyzing the direct and indirect relationship between the variables. Overall two-step process has been defined in the existing literature for assessing and reporting the results of Partial Least Square (PLS)-Structural Equation Modeling (SEM). As explained by Henseler, Ringle, and Sinkovics (2009), it is found that two-step process is the most appropriate method to report the findings of Smart-PLS. Followings are the details for the stated two step: The process of estimating the measurement model has various steps which include reliability and validity of the constructs. Under this method, research has conducted the CFA to confirm the validity of the measurement model while using Smart-PLS (Ringle, Wende, & Will, 2005). However, on the other hand, the structural model estimates and considers the relationship between the exogenous and endogenous variables for the consideration of hypotheses testing. For assessing the structural model, various measures are available in the literature which were presented in the subsequent section. The current study is consistent with the previous studies which PLS-SEM had already used (Ahmad, Ahmad, Farhan, & Arshad, 2020; Ahmad, Bin Mohammad, & Nordin, 2019). In line with studies, the current had also used the PLS-SEM approach.

Measurement Model of the Study

Present study has applied the PLS-SEM method for testing the model. In overall process, the first step was to attain the desired level of reliability and validity. Ultimately, to analyse our hypotheses we used Structural Equation Model (SEM). alidity, Additionally, Fornell-Larcker and Heterotrait-Monotrait Ratio of the correlation (HTMT) also helps to explore the discriminant validity. Before proceeding for the structural model, it is very much significant to assess the reliability.

Findings under Table 2 provides the information about all the items with the factor loadings of above the threshold point of 0.5. Based on the threshold level, all other items which were found to be below this score were deleted in order to maintain the internal consistency of the model. To review the internal consistency and reliability of the construct, composite reliability or CR is among the significant measurements which values should be a greater than 0.7. The Table 2 predicted values had shown that all the values are greater than 0.7 that fulfill the criteria of CR. Moreover, authors like Sun, Zhang, Liu, and Lu (2007) have clearly mentioned that internal consistency is known as the degree to which same concept is measured by all the items as added in the scale of the study. For this purpose, Cronbach alpha and CR coefficients are very useful as examined with the literature support of (Hair, Hult, Ringle, & Sarstedt, 2014; Peterson & Kim, 2013). Due to this reason, both of these measures are calculated and presented under Table 2. In addition, authors likeMallery and George (2003) have provided their valuable suggestion for considering the value of Cronbach alpha. For example, the value of alpha (α) greater than 0.90 is assumed as excellent, greater than 0.80 is good, and greater than 0.70 is acceptable to justify the internal consistency of the construct. However, it is also believed that value of α up to .70 is assumed as near to the lowest threshold, hence touching the limited acceptance criteria. In the meantime, the same rule for accepting the value of CR is suggested by (J. F. Hair, Ringle, & Sarstedt, 2013). In the present study analyses, the value of Cronbach's alpha is greater than 0.7 that fulfill the previous studies recommended criteria.

Table 2: Reliability and Validity Results

Constructs	Items	Loadings		CR	AVE
Overconfidence	OVC1	0.593	0.918	0.932	0.58
	OVC2	0.763			
	OVC3	0.84			
	OVC4	0.654			
	OVC6	0.812		0.811	0.591
	OVC7	0.784			

Economic expectations	EE1	0.623	0.782	0.862	0.613
	EE2	0.869			
	EE3	0.874			
	EE4	0.738			
	EE5				
	EE6				
Social factors	SOF1	0.717	0.901	0.911	0.539
	SOF2	0.834			
	SOF3	0.815			
	SOF4	0.547			
Information search	IS1	0.879	0.886	0.929	0.813
	IS2	0.903			
	IS3	0.922			
	IS4	0.893			
	IS5	0.813			
	IS6	0.912			
Financial literacy	FS1	0.897	0.881	0.927	0.808
	FS2	0.910			
	FS3	0.891			
Investment decision making Behavior	IDMB1	0.571	0.705	0.836	0.629
	IDMB2	0.581			
	IDMB3	0.514			
	IDMB4	0.618			

Note: OVC-overconfidence, EE-economic expectations, SOF-social factors, IS-information search, FL-financial literacy, IDMB-investor decision making behavior

After discussing the convergent validity, present section provides the information and statistical evidence about discriminant validity. The overall assessment of discriminant validity confirms the fact that construct as a greatest association with their relative indicators as expressed by (J. F. Hair, Hult, Ringle, & Sarstedt, 2017). Therefore, this study has focused on the methods like Fornell-Larcker, Heterotrait-Monotrait Ratio (HTMT) of Correlations, and cross loadings. Table 3 provides the findings for the Fornell-Larcker criterion. For better understanding Fornell and Larcker (1981) have provided a meaningful guidelines while saying that AVE square root for each of the variable and correlation among the latent constructs may be used as comparative tool. Furthermore, a rule of thumb as provided by these authors indicate to use AVE only as equal to 0.50 to greater. Addition to this standard, Hair et al., (2014) further stated that square root of AVE would always be higher than the value of correlation of the construct. Based on this discussion, Table 3 shows the values of Fornell-Larcker Criterion Analysis for Checking Discriminant Validity. It is found that the square root of AVE is more than the correlation among the latent variables which reasonably specifies the achievement criteria for the discriminant validity.

Table 3: Fornell and Lacker Criterion Discriminant Validity

	OVC	EE	SOF	IS	FS	IDMB
OVC	0.84					
EE	0.099	0.902				
SOF	0.704	0.231	0.899			
IS	0.351	0.153	0.173	0.762		
FS	0.486	0.29	0.398	0.577	0.783	
IDMB	0.065	0.599	0.122	0.207	0.182	0.734

Note: OVC-overconfidence, EE-economic expectations, SOF-social factors, IS-information search, FL-financial literacy, IDMB-investor decision making behavior

Addition to the above discussion, Table 4 shows the HTMT by means of a simulation study for the overall construct of the study. This stated approach was suggested by Henseler, Ringle, and Sarstedt (2015). As per their findings, if the value of HTMT is below than 0.90, then there is a need to recognize the discriminant within the two constructs.

Table 4: Hetrotrait-Monotrait Ratio Correlation Criterion Discriminant Validity

	OVC	EE	SOF	IS	FS	IDMB
OVC						
EE	0.13					
SOF	0.842	0.254				
IS	0.402	0.171	0.189			
FS	0.639	0.343	0.504	0.679		
IDMB	0.15	0.523	0.11	0.197	0.16	

Note: OVC-overconfidence, EE-economic expectations, SOF-social factors, IS-information search, FL-financial literacy, IDMB-investor decision making behavior

Assessment of Structural Model

After discussing the assessment of the measurement model, present section explains the assessment of structural model. For assessing the structural model, research contribution by Chin (2010) may be assumed as a significant evidence. Under the process of assessing the structural model of the study, the first step is to examine the predictive power of the mode with the help of coefficient of determination; R^2 as explained by all the exogenous variables for endogenous construct (Chin, 2010; Henseler et al., 2009). Besides, the level of significance of the path coefficients is also determined along with R^2 . The value of path coefficients specifies the strength of the relationship between both independent and dependent variable, whereas the value of R^2 is the overall predictive intensity of the dependent variable (Chin, 1998; Chin, Marcolin, & Newsted, 2003). The R^2 of the current study is 56 percent that showed a subsequent change in endogenous variable. On the other hand, the Structural Equation Modeling Technique (SEM) had shown that overconfidence (OVC), economic expectations (EE) and social factors (SOF) have a positive and significant relationship with the investment decision making behavior (IDMB) that are supporting to (H1, H2, and H3). These findings indicate that the above discussed factors are important factors for making a better decision making in the investment perspective. On the other hand, the findings further shown that OVC, ECO and SOF are also positively and significantly associated with the information search (IS) that are supporting to (H4, H5, and H6). While, the IS did not have any significant relationship with the IDMB that is not supporting to hypothesis to (H7).

The indirect effect findings further shown that shown that IS did not significantly and positively mediates among the relationship of OVC, EE, SOF and IDMB that is not supporting to (H8, H9, H10). These findings have shown that OVC, EE and SOF are directly effect to IDMB but not effect indirectly. A possible reason for this explanation is that there could be an overlapping of other variable in the model. Another, possible reason is that investor had a little attention on the development of information about the investment perceptive. In other context, the financial literacy (FL) is positively and significantly moderates among the relationship of OVC, EC, SOF and IDMB that is supporting to (H11, H12, H13). These findings have shown that when the investors have a better level of literacy in the investment perspective then the risk level is minimized and better level of investment is occurred in the organizations. Therefore, the financial literacy is considered to be an important moderating that provide help to create a better decision making in the investment perspective for the investment. In this regards, the financial literacy moderating effect is considered to be a big contributions of the study. The direct and indirect effect results are predicted in the following Table 5.

Table 5: Hypothesis Testing Results

Hypothesis	Beta	SD	T Statistics	P Values	Results
OVC-> IDMC	0.343	0.071	4.805	0.000	Supported
EE -> IDMC	0.156	0.046	3.380	0.001	Supported
SOF-> IDMC	0.224	0.074	3.020	0.003	Supported
OVC-> IS	0.345	0.076	4.552	0.000	Supported
EE -> IS	0.225	0.080	2.818	0.004	Supported
SOF-> IS	0.143	0.051	2.792	0.045	Supported
IS-> IDMC	0.166	0.092	1.800	0.072	Not Supported
OVC-> IS-> IDMC	0.001	0.002	0.298	0.766	Not Supported
EE -> IS-> IDMC	0.001	0.002	0.382	0.702	Not Supported
SOF-> IS-> IDMC	0.001	0.002	0.348	0.728	Not Supported
FL*CVC-> IDMC	0.422	0.049	8.637	0.000	Supported
FL*EE -> IDMC	0.331	0.051	6.493	0.000	Supported
FL*SOF-> IDMC	0.396	0.049	8.035	0.000	Supported

Note: OVC-overconfidence, EE-economic expectations, SOF-social factors, IS-information search, FL-financial literacy, IDMB-investor decision making behavior

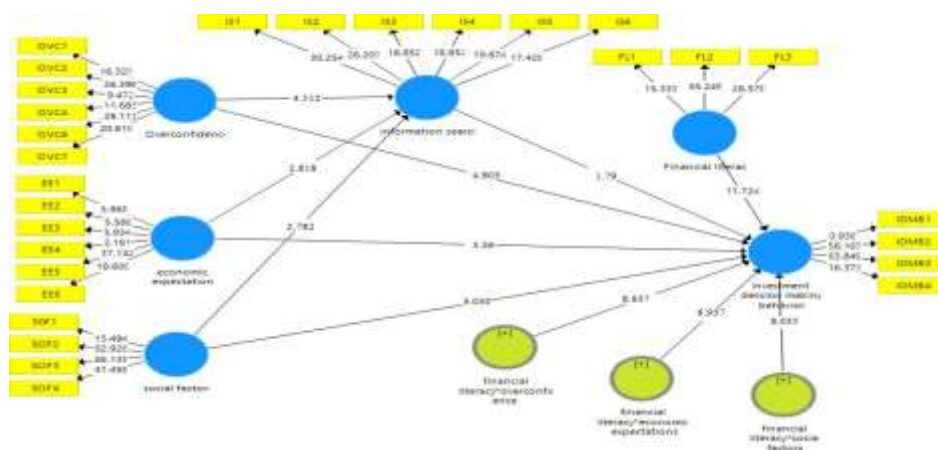


Fig.2: Structural Model

CONCLUSION

The current study purpose is to figure out the relationship among the overconfidence (OVC), economic expectations (EE), social factors (SOF) and investment decision making behavior (IDMB) with the median and moderating effect. For this purpose, the data was collected from the investors of Pakistan Stock Exchange (PSX) that selected through convenient sampling technique. The Structural Equation Modeling (SEM) results had shown that overconfidence (OVC), economic expectations (EE), social factors (SOF) have a positive and significant relationship with investment decision making behavior (ID MB). The results are consistent with the previous studies (Bashir et al.,2013; Shive, 2010; Obamuyi, 2013; Al-Tamimi, 2009; Qadri & Shabbir ,2013;Barber and Odean (2001).

On the other hand, OVC, EE, SOF also have a positive and significant relationship with the information search (IS) while IS did not have direct effect on the IDMC. Moreover, financial literacy (FL) has a significant moderating effect among the relationship of OVC, EE, SOF and IDMC.

LIMITATIONS AND FUTURE DIRECTIONS

The current study still had some limitations that could provide help for the future research. Firstly, the present study limited on the investor of PSX and did not include other investors which are investing in other markets therefore the study had a limited generalizability while future study could be conduct along with other market investors to know about the research findings variability. Secondly, the study was limited on three exogenous variables while there are also other variables that could effect to the investors behaviors that increase the model predictive relevance because the current study predictive relevance is 54 percent which shows that there are other variables that could affect other 46 percent predictive relevance. Thirdly, the current study is limited on cross sectional research design in which data had collected at first time that had limited generalizability while in longitudinal design where data could be collected in different times that could increase the research generalizability. Our study would be beneficial to stock market policy makers and regulators. They could be provided a helping hand in assisting them to understand the mechanisms and various roles of behavioral factors that imply on investors’ decision-making aspect.

REFERENCES

1. Almenberg, J. and A. Dreber, 2015. Gender, stock market participation and financial literacy. *Economics Letters*, 137: 140-142. Available at: <https://doi.org/10.1016/j.econlet.2015.10.009>.
2. Al-Tamimi, H. A. H. (2009). Financial literacy and investment decisions of UAE investors. *The Journal of Risk Finance*.
3. Al-Tamimi, H.A. and A.A.B. Kalli, 2009. Financial literacy and investment decisions of UAE investors. *The Journal of Risk Finance*, 10(5): 500-516. Available at: <https://doi.org/10.1108/15265940911001402>
4. Arwinder, S., Sandhu, H., & Kundu, C. (2010). Investors’ adoption of internet stock trading. *Journal of Internet Banking and Commerce*, 15(1), 112-129.
5. Bakar, S., & Yi, A. N. C. (2016). The impact of psychological factors on investors’ decision making in Malaysian stock market: a case of Klang Valley and Pahang. *Procedia Economics and Finance*, 35, 319- 328.
6. Baker, H. K., & Nofsinger, J. R. (2002). Psychological biases of investors. *Financial services review*, 11(2), 97.
7. Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The quarterly journal of economics*, 116(1), 261-292.

8. Bashir, T., Javed, A., Usman, A., Meer, U. I., & Naseem, M. M. (2013). Empirical Testing of Heuristics Interrupting the Investor's Rational Decision Making. *European Scientific Journal*, 9(28).
9. Bernheim, B. D., & Garrett, D. M. (2003). The effects of financial education in the workplace: Evidence from a survey of households. *Journal of public Economics*, 87(7-8), 1487-1519.
10. Bond, S. R., Cummins, J. G., Eberly, J., & Shiller, R. J. (2000). The stock market and investment in the new economy: Some tangible facts and intangible fictions. *Brookings Papers on Economic Activity*, 2000(1), 61-124.
11. Brabazon, T. (2000), *Behavioural Finance: A New Sunrise or a False Dawn?*, University of Limerick,
12. Limerick, pp. 1-7.
13. Chen, H., & Volpe, R. P. (2002). Gender differences in personal financial literacy among college students. *Financial services review*, 11(3), 289-307.
14. Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
15. Chin, W. W. (2010). How to write up and report PLS analyses. In *Handbook of partial least squares* (pp. 655-690): Springer.
16. Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217.
17. Combrink, S., & Lew, C. (2019). Potential Underdog Bias, Overconfidence and Risk Propensity in Investor Decision-Making Behavior. *Journal of Behavioral Finance*, 1-15.
19. Cude, B., Lawrence, F., Lyons, A., Metzger, K., LeJeune, E., Marks, L., & Machtmes, K. (2006). College students and financial literacy: What they know and what we need to learn. *Proceedings of the Eastern Family Economics and Resource Management Association*, 102(9), 106-109.
20. Davis, A. (2006). Media effects and the question of the rational audience: lessons from the financial markets. *Media, Culture & Society*, 28(4), 603-625.
21. De Visser, K. E., Korets, L. V., & Coussens, L. M. (2005). De novo carcinogenesis promoted by chronic inflammation is B lymphocyte dependent. *Cancer cell*, 7(5), 411-423.
22. Disney, R. and J. Gathergood, 2013. Financial literacy and consumer credit portfolios. *Journal of Banking & Finance*, 37(7): 2246-2254. Available at: <https://doi.org/10.1016/j.jbankfin.2013.01.013>.
23. Doukas, J. A., & Petmezas, D. (2007). Acquisitions, overconfident managers and self-attribution bias. *European Financial Management*, 13(3), 531-577.
24. Fachrudin, K. R., & Fachrudin, K. A. (2016). The influence of education and experience toward investment decision with moderated by financial literacy. *Polish Journal of Management Studies*, 14.
25. Fama, E. (1970), "Efficient Capital markets: a review of theory and empirical work", *Journal of Finance*,
26. Fodness, D., & Murray, B. (1997). Tourist information search. *Annals of tourism research*, 24(3), 503-523.
27. Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics. In: *SAGE Publications Sage CA: Los Angeles, CA*.
28. George, D., & Mallery, P. (2003). *Reliability analysis. SPSS for Windows, step by step: a simple guide and reference*, 14th edn. Boston: Allyn & Bacon, 222-232.
29. Gill, S., Khurshid, M. K., Mahmood, S., & Ali, A. (2018). Factors Effecting Investment Decision Making Behavior: The Mediating Role of Information Searches. *European Online Journal of Natural and Social Sciences*, 7(4), pp. 758-767.
30. Hair, Hult, G., Ringle, C., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. America: Sage Publication Inc.
31. Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage publications.
32. Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning*, 46(1-2), 1-12.
33. Hayat, A. and M. Anwar, 2016. Impact of behavioral biases on investment decision; moderating role of financial literacy. *SSRN Electronic Journal*: 1-14.
34. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
35. Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing. In *New challenges to international marketing* (pp. 277-319): Emerald Group Publishing Limited.
36. Islamoglu, M., Apan, M., & Ayvali, A. (2015). Determination of factors affecting individual investor behaviours: A study on bankers. *International Journal of Economics and Financial Issues*, 5(2), 531-543.
37. Jain, R., P. Jain and C. Jain, 2015. Behavioral biases in the decision making of individual investors. *IUP Journal of Management Research*, 14(3): 7-27.

38. Kahneman, D. and Tversky, A. (1974), "Judgment under uncertainty: heuristics and biases", *Journal of Science*, Vol. 85 No. 4157, pp. 1124-1131.
39. Kahneman, D., & Tversky, A. (1979). On the interpretation of intuitive probability: A reply to Jonathan Cohen.
40. Kimball, M. S., & Shumway, T. (2010). Investor sophistication and the home bias, diversification, and employer stock puzzles. *Diversification, and Employer Stock Puzzles* (January 29, 2010).
41. Lin, N. (2002). *Social capital: A theory of social structure and action* (Vol. 19): Cambridge university press.
42. Loibl, C., & Hira, T. K. (2009). Investor information search. *Journal of economic psychology*, 30(1), 24-41.
43. Lusardi, A. (2008). Financial literacy: an essential tool for informed consumer choice? (No. w14084). National Bureau of Economic Research.
44. Lusardi, A., & Mitchell, O. S. (2007). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of monetary Economics*, 54(1), 205-224.
45. Lusardi, A., & Mitchell, O. S. (2017). How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness. *Quarterly Journal of Finance*, 7(03), 1750008.
46. Makki, M. A. M., & Lodhi, S. A. (2014). Impact of corporate governance on intellectual capital efficiency and financial performance. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 8(2), 305-330.
47. Markowitz, H. (1952), "Portfolio selection", *The Journal of Finance*, Vol. 7 No. 1, pp. 77-91
48. Muth, J. F. (1961). Rational expectations and the theory of price movements. *Econometrica: Journal of the Econometric Society*, 315-335.
49. Obamuyi, T. M. (2013). Factors influencing investment decisions in capital market: A study of individual investors in Nigeria. *Organizations and markets in emerging economies*, 4(07), 141-161.
50. Park, J., Konana, P., Gu, B., Kumar, A., & Raghunathan, R. (2010). Confirmation bias, overconfidence, and investment performance: Evidence from stock message boards. *McCombs Research Paper Series No. IROM-07-10*.
51. Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliability. *Journal of applied psychology*, 98(1), 194-198.
52. Qadri, S. U., & Shabbir, M. (2014). An empirical study of overconfidence and illusion of control biases, Impact on investor's decision making: an evidence from ISE. *European Journal of Business and Management*, 6(14), 38-44.
53. Qasim, M., Hussain, R., Mehboob, I., & Arshad, M. (2019). Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. *Accounting*, 5(2), 81-90.
54. Rachmatullah, A., & Ha, M. (2019). Examining high-school students' overconfidence bias in biology exam: a focus on the effects of country and gender. *International Journal of Science Education*, 41(5), 652- 673.
55. Rana, H. M., Khan, J., & Baig, A. A. (2014). Information searches as a mediator between Income and risky decision-making behavior and influence of education on risky decision-making behavior: a study from Pakistan. *The Business & Management Review*, 4(3), 81.
56. Ratnadi, N.M., Widanaputra, A.A., & Putra, I. (2020). Behavioral Factors Influencing Investment Decision-Making By College Student: An Empirical Study In Bali Province, Indonesia. *International Journal of Scientific & Technology Research*, 9, 1358-1368.
57. Ringle, C. M., Wende, S., & Will, A. (2005). SmartPLS 2.0 (M3) Beta. In: Hamburg Germany.
58. Ritter, J.R. (2003), "Behavioral finance", *Journal of Pacific-Basin Finance*, Vol. 11 No. 4, pp. 429-437.
59. Sabir, S. A., Mohammad, H. B., & Shahar, H. B. K. (2019). The role of overconfidence and past investment experience in herding behaviour with a moderating effect of financial literacy: evidence from Pakistan stock exchange. *Asian Economic and Financial Review*, 9(4), 480.
60. Scott, J., Stumpp, M., & Xu, P. (2003). Overconfidence bias in international stock prices. *The journal of portfolio management*, 29(2), 80-89.
61. Servon, L. J., & Kaestner, R. (2008). Consumer financial literacy and the impact of online banking on the financial behavior of lower-income bank customers. *Journal of consumer affairs*, 42(2), 271-305.
62. Shah, S. Z. A., Ahmad, M., & Mahmood, F. (2018). Heuristic biases in investment decision-making and perceived market efficiency. *Qualitative Research in Financial Markets*.
63. Shah, S.F., Raza, M.W. and Khurshid, M.R. (2012), "Overconfidence and perceived market efficiency", *Interdisciplinary Journal of Contemporary Research in Business*, Vol. 3 No. 10.
64. Shanmugham, R., & Ramya, K. (2012). Impact of social factors on individual investors' trading behaviour. *Procedia Economics and Finance*, 2(2012), 237-246.
65. Shive, S. (2010). An epidemic model of investor behavior. *Journal of Financial and Quantitative Analysis*, 169-198.
66. Sitkin, S. B., & Weingart, L. R. (1995). Determinants of risky decision-making behavior: A test of the

- mediating role of risk perceptions and propensity. *Academy of management Journal*, 38(6), 1573-1592.
69. Stock Exchange”, *International Journal of Business and Emerging Markets*, Vol. 1 No. 1,
 70. Sun, J., Zhang, R., Liu, Z., & Lu, G. (2007). Thermal reliability test of Al–34% Mg–6% Zn alloy as latent heat storage material and corrosion of metal with respect to thermal cycling. *Energy conversion and management*, 48(2), 619-624.
 71. Taylor, J. W. (1974). The role of risk in consumer behavior: A comprehensive and operational theory of risk taking in consumer behavior. *Journal of marketing*, 38(2), 54-60.
 72. Testa, I., Colantonio, A., Galano, S., Marzoli, I., Trani, F., & di Uccio, U. S. (2020). Effects of instruction on students’ overconfidence in introductory quantum mechanics. *Physical Review Physics Education Research*, 16(1), 010143.
 73. Trinugroho, I., & Sembel, R. (2011). Overconfidence and excessive trading behavior: An experimental study. *International Journal of Business and Management*, 6(7), 147.
 74. Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2), 449-472.
 75. Vitt, F. M., Armstrong, T. P., Cravens, T. E., Dreschhoff, G. A., Jackman, C. H., & Laird, C. M. (2000). Computed contributions to odd nitrogen concentrations in the Earth’s polar middle atmosphere by energetic charged particles. *Journal of Atmospheric and Solar-Terrestrial Physics*, 62(8), 669-683.
 76. Waweru, N. M., Munyoki, E., & Uliana, E. (2008). The effects of behavioural factors in investment decision-making: a survey of institutional investors operating at the Nairobi Stock Exchange. *International Journal of Business and Emerging Markets*, 1(1), 24-41.
 77. Ahmad, R., Ahmad, M. J., Farhan, M., & Arshad, M. A. (2020). THE RELATIONSHIP WITHIN GREEN MARKETING STRATEGIES AND MARKET PERFORMANCE OF PAKISTAN SMES. *Hamdard Islamicus*, 43(2..), 204-216.
 78. Ahmad, R., & Bin Mohammad, H. (2019). Exploring the Relationship of Intellectual Capital, Board Characteristics and Business Performance: A Literature Review. *Pakistan Journal of Humanities and Social Sciences*, 7(2), 185-202.
 79. Ahmad, R., Bin Mohammad, H., & Nordin, S. B. (2019). Moderating effect of board characteristics in the relationship of structural capital and business performance: An evidence on Pakistan textile sector. *Journal of Studies in Social Sciences and Humanities*, 5(3), 89-99.
 80. Al-Tamimi, H. A. H. (2009). Financial literacy and investment decisions of UAE investors. *The Journal of Risk Finance*.
 81. Arwinder, S., Sandhu, H., & Kundu, C. (2010). Investors’ adoption of internet stock trading. *Journal of Internet Banking and Commerce*, 15(1), 112-129.
 82. Baker, H. K., & Nofsinger, J. R. (2002). Psychological biases of investors. *Financial services review*, 11(2), 97.
 83. Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The quarterly journal of economics*, 116(1), 261-292.
 84. Bernheim, B. D., & Garrett, D. M. (2003). The effects of financial education in the workplace: Evidence from a survey of households. *Journal of public Economics*, 87(7-8), 1487-1519.
 85. Bond, S. R., Cummins, J. G., Eberly, J., & Shiller, R. J. (2000). The stock market and investment in the new economy: Some tangible facts and intangible fictions. *Brookings Papers on Economic Activity*, 2000(1), 61-124.
 86. Chen, H., & Volpe, R. P. (2002). Gender differences in personal financial literacy among college students. *Financial services review*, 11(3), 289-307.
 87. Chin, W. W. (1998). The partial least squares approach to structural equation modeling. *Modern methods for business research*, 295(2), 295-336.
 88. Chin, W. W. (2010). How to write up and report PLS analyses *Handbook of partial least squares* (pp. 655-690): Springer.
 89. Chin, W. W., Marcolin, B. L., & Newsted, P. R. (2003). A partial least squares latent variable modeling approach for measuring interaction effects: Results from a Monte Carlo simulation study and an electronic-mail emotion/adoption study. *Information systems research*, 14(2), 189-217.
 90. Combrink, S., & Lew, C. (2019). Potential Underdog Bias, Overconfidence and Risk Propensity in Investor Decision-Making Behavior. *Journal of Behavioral Finance*, 1-15.
 91. Cude, B., Lawrence, F., Lyons, A., Metzger, K., LeJeune, E., Marks, L., & Machtmes, K. (2006). College students and financial literacy: What they know and what we need to learn. *Proceedings of the Eastern Family Economics and Resource Management Association*, 102(9), 106-109.
 92. Davis, M. (2006). *Planet of slums*: Verso.
 93. De Visser, K. E., Korets, L. V., & Coussens, L. M. (2005). De novo carcinogenesis promoted by chronic inflammation is B lymphocyte dependent. *Cancer cell*, 7(5), 411-423.
 94. Doukas, J. A., & Petmezas, D. (2007). Acquisitions, overconfident managers and self-attribution bias.

- European Financial Management, 13(3), 531-577.
95. Fachrudin, K. R., & Fachrudin, K. A. (2016). The influence of education and experience toward investment decision with moderated by financial literacy. *Polish Journal of Management Studies*, 14.
 96. Fodness, D., & Murray, B. (1997). Tourist information search. *Annals of tourism research*, 24(3), 503-523.
 97. Fornell, C., & Larcker, D. F. (1981). *Structural equation models with unobservable variables and measurement error: Algebra and statistics*: SAGE Publications Sage CA: Los Angeles, CA.
 98. Gill, S., Khurshid, M. K., Mahmood, S., & Ali, A. (2018). Factors Effecting Investment Decision Making Behavior: The Mediating Role of Information Searches. *European Online Journal of Natural and Social Sciences*, 7(4), pp. 758-767.
 99. Hair, Hult, G., Ringle, C., & Sarstedt, M. (2014). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. America: Sage Publication Inc.
 100. Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2017). *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage publications.
 101. Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long Range Planning*, 46(1-2), 1-12.
 102. Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, 43(1), 115-135.
 103. Henseler, J., Ringle, C. M., & Sinkovics, R. R. (2009). The use of partial least squares path modeling in international marketing *New challenges to international marketing* (pp. 277-319): Emerald Group Publishing Limited.
 104. Islamoğlu, M., Apan, M., & Ayvali, A. (2015). Determination of factors affecting individual investor behaviours: A study on bankers. *International Journal of Economics and Financial Issues*, 5(2), 531-543.
 105. Kimball, M., & Shumway, T. (2006). Investor sophistication, and the participation, home bias, diversification, and employer stock puzzles. Unpublished Manuscript, University of Michigan.
 106. Lin, N. (2002). *Social capital: A theory of social structure and action* (Vol. 19): Cambridge university press.
 107. Loibl, C., & Hira, T. K. (2009). Investor information search. *Journal of economic psychology*, 30(1), 24-41.
 108. Lusardi, A. (2008). *Financial literacy: an essential tool for informed consumer choice?* : National Bureau of Economic Research.
 109. Lusardi, A., & Mitchell, O. S. (2007). Baby boomer retirement security: The roles of planning, financial literacy, and housing wealth. *Journal of monetary Economics*, 54(1), 205-224.
 110. Lusardi, A., & Mitchell, O. S. (2017). How ordinary consumers make complex economic decisions: Financial literacy and retirement readiness. *Quarterly Journal of Finance*, 7(03), 1750008.
 111. Makki, M. A. M., & Lodhi, S. A. (2014). Impact of corporate governance on intellectual capital efficiency and financial performance. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 8(2), 305-330.
 112. Mallery, P., & George, D. (2003). *SPSS for Windows step by step: a simple guide and reference*. Allyn, Bacon, Boston.
 113. Muth, J. F. (1961). Rational expectations and the theory of price movements. *Econometrica: Journal of the Econometric Society*, 315-335.
 114. Obamuyi, T. M. (2013). Factors influencing investment decisions in capital market: A study of individual investors in Nigeria. *Organizations and markets in emerging economies*, 4(07), 141-161.
 115. Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliability. *Journal of applied psychology*, 98(1), 194-198.
 116. Qasim, M., Hussain, R., Mehboob, I., & Arshad, M. (2019). Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. *Accounting*, 5(2), 81-90.
 117. Rachmatullah, A., & Ha, M. (2019). Examining high-school students' overconfidence bias in biology exam: a focus on the effects of country and gender. *International Journal of Science Education*, 41(5), 652- 673.
 118. Rana, H. M., Khan, J., & Baig, A. A. (2014). Information searches as a mediator between Income and risky decision-making behavior and influence of education on risky decision-making behavior: a study from Pakistan. *The Business & Management Review*, 4(3), 81.
 119. Riaz, S., Ahmed, R., Parkash, R., & Ahmad, M. J. (2020). *Determinants of Stock Market Investors' Behavior in COVID-19: A Study on the Pakistan Stock Exchange*.
 120. Ringle, C. M., Wende, S., & Will, A. (2005). *SmartPLS 2.0 (M3) Beta*: Hamburg Germany.
 121. Scott, J., Stumpp, M., & Xu, P. (2003). Overconfidence bias in international stock prices. *The journal of portfolio management*, 29(2), 80-89.
 122. Servon, L. J., & Kaestner, R. (2008). Consumer financial literacy and the impact of online banking on the financial behavior of lower-income bank customers. *Journal of Consumer Affairs*, 42(2), 271-305.
 123. Shanmugham, R., & Ramya, K. (2012). Impact of social factors on individual investors' trading behaviour.

- Procedia Economics and Finance, 2(2012), 237-246.
124. Shive, S. (2010). An epidemic model of investor behavior. *Journal of Financial and Quantitative Analysis*, 169-198.
 125. Sitkin, S. B., & Weingart, L. R. (1995). Determinants of risky decision-making behavior: A test of the mediating role of risk perceptions and propensity. *Academy of management Journal*, 38(6), 1573-1592.
 126. Sun, J., Zhang, R., Liu, Z., & Lu, G. (2007). Thermal reliability test of Al-34% Mg-6% Zn alloy as latent heat storage material and corrosion of metal with respect to thermal cycling. *Energy conversion and management*, 48(2), 619-624.
 127. Taylor, J. W. (1974). The role of risk in consumer behavior: A comprehensive and operational theory of risk taking in consumer behavior. *Journal of marketing*, 38(2), 54-60.
 128. Testa, I., Colantonio, A., Galano, S., Marzoli, I., Trani, F., & di Uccio, U. S. (2020). Effects of instruction on students' overconfidence in introductory quantum mechanics. *Physical Review Physics Education Research*, 16(1), 010143.
 129. Van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2), 449-472.
 130. Vitt, F. M., Armstrong, T. P., Cravens, T. E., Dreschhoff, G. A., Jackman, C. H., & Laird, C. M. (2000). Computed contributions to odd nitrogen concentrations in the Earth's polar middle atmosphere by energetic charged particles. *Journal of Atmospheric and Solar-Terrestrial Physics*, 62(8), 669-683.