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INDIVIDUAL INVESTMENT BEHAVIOR AND TRADE RETURNS: MODERATING ROLE OF FINANCIAL LITERACY

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ABSTRACT

The main aim of present research is to investigates the existence of behavioral biases i.e. disposition effect, herding and overconfidence in investment decision of investors and its subsequent impact on the trade returns of individual investors with moderating role of financial literacy. The efficient market hypothesis and other traditional finance theories assumes the stock market investors as rational while the behavioral finance paradigm refute this notion and asserts that all investors are not rational in their investment decision and are prone to behavioral biases. Further the literature reveals that financial literacy reduces the impact of behavioral biases on investment decision and enhance the rationality of investors. these notions are based on the heuristics and prospect theory. In this regards the literature has been reviewed where mixed results have been seen on the impact of behavioral biases on investment decision and trade returns of investors while there is very low work on the moderating role of financial literacy between these behavioral biases and trade returns of investors. the methodology consists of objectivist ontological stance and positivist epistemological approach, quantitative research design, deductive approach and explanatory and exploratory type of research. The data has been collected with 5-point likert scale which has been adopted from various scholars of the field. The population includes investors of if Khyber Pakhtunkhwa (KPK) while includes 600 individual investors from various brokerage firms in Peshawar. The results reveal that investors incorporate the disposition effect, herding and overconfidence in their investment decision has strong impact on the investment returns of investors. further financial literacy plays a strong moderating role among disposition effect, herding, overconfidence and trade returns of the investors. it is recommended on the basis of results that for smooth and efficient operation of stock market the government should enhance the financial literacy of investors.

Keywords: disposition effect, herding overconfidence, behavioral finance, financial literacy

INTRODUCTION

Financial management, international markets dynamics and the operations and trading activities of agents, either individual or institutions working in these financial markets are the central areas of interest chosen for empirical studies by countless number of scholars for decades. The thorough research studies have been emerged in a crucial arguments and debates between two groups the rationalist and behaviorist. The proponent of rationalist like William Sharpe, Eigen Fama, Markowitz, Kenneth Ronald French, Franco Modigliani, Merton Miller and Stephen Ross consider the stock market participants as rational (Simon, 1972) The investor whose decision has been based on concrete justifications, sound reasons, analysis and logic or the individuals whose decision has been driven by the expected utility maxim (Markowitz, 1959) While the behaviorist proclaims that stock market agents are not so rational. In addition the irrational investor is one whose investment decision is subject to emotions i.e. greed, fear, anxiety, cognitive biases that cause the individuals to draw conclusion on the bases of short term phenomena while investor's intentions might be for long term (Shefrin & Statman, 2011).

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The classical or traditional finance has some key theories and model like capital asset pricing model, efficient market hypothesis expected utility theory modern portfolio theory and so on: All these theory and models have some underlying assumptions and theses models and theories are compelling for and valid only if the primary assumptions are satisfied. Moreover the behavioral finance tries to investigate either the investor's behavior is quite align with these theories, in other words, does the investor act according to the assumption of the classical theories, the investors have the ability and do thorough analysis before taking investment decision, specially the individual investor (Barberis & Thaler, 2003).

Behavioral finance is the combination of finance, psychology and sociology. Behavioral finance basically argue that investors usually but not always act completely in accordance with utility theory but systematically commit mistakes in investment assessment and thus make irrational and inconsistent decision in same context and circumstances and such factors are the major driver of inefficient stock markets. The stock market and speculative assessment are comparatively complex phenomena, further the human brain has its own limitations to understand limited things with limited resources hence quite often it has been seen in market that individuals base their investment decisions on their own assessment which is absolutely biased based on their respective biases. Most often majority of investors do not know how to analyze the complex information of stock exchange thus applying "shortcuts" in taking investment decisions. This debate between rationalist and behaviorist has opened a plethora of diverse opinions, many of which are advocating psychologically more realistic stance in finance and hence we are in transition point between the stated two paradigms (Rubinstein, 2001).

Most of the academic researchers in finance are based on the hypothesis of the investors' full rationality. Empirical results from study in finance has been mixed, but have commonly not supported the hypothesis of complete rationality which is one of the basic assumptions of the Efficient Market Hypothesis (EMH) and modern portfolio theory (Dreman & Berry, 1995). Ever since recent movements, nevertheless, the financial academic researcher's enthusiasm for this hypothesis becomes much weaker. This changing perception motivated psychologists and economists alike to carry out experimental research by introducing irrationality of human beings. Researchers in finance were then incited to break with the full rationality hypothesis and to recognize the neutral effect of some psychological biases on the investor's decisions and reactions, and subsequently the effect of such decisions and reactions on the stock price movements.

Decision-making can be defined as the process of choosing a particular alternative from many available alternatives;(Shefrin & Statman, 2000). It is a complicated multi-step process involving analysis of various personal, technical and situational factors. Considering investment decisions the most crucial challenge faced by investors. Some socio-economic factors are age, education, income etc. On the technical side, investment decisions can be derived from various models of finance like the capital asset pricing model (CAPM), efficient market hypothesis, arbitrage pricing theory etc.

Thus cognitive psychology should be given importance in the process of decision-making (Chandra, 2008). As a result of the bull market from 2004 to 2007 and the subsequent financial crisis, there has been a lot of fresh focus on the irrational investor. "Behavioral Finance is becoming an integral part of decision-making process because it heavily influences the investors' performance" (Vadali, Ramachandran, & Banerjee, 2011) "An understanding of how our emotions feeling and cognitive dissonance result in irrational behavior is indispensable for any investor" (Peterson, 2007).

On the other hand, Poor financial decisions are also associated with low levels of financial literacy. For instance, and find that poor understanding of financial affairs is associated with common investment mistakes, such as under-diversification, portfolio inertia, and the tendency to sell winning stocks and hold losing stocks. A growing literature has found strong links between financial literacy and savings and investment behavior. for example, show that households with higher levels of financial literacy are more likely to plan for retirement, invest in securities and that planners arrive at retirement with substantially more assets than non-planners. A research conducted by the examined the level of financial literacy in 12 major countries of the world including UK, USA, European countries, Japan and Australia. The research concluded that the level of financial literacy for most of the respondents is very low. Show that those who display low financial literacy are less likely to plan for retirement and as a result accumulate much less wealth. found that in order to succeed at the stock market, the investors engaged in online trading should be more knowledgeable and informed as compared to other investors, because they lack information about what is happening inside the stock market and they may also become the victims of information asymmetry.

In a nutshell there exist an abundant empirical research on the link between financial literacy and investment behavior but there arise some questions like what does the financial literacy mean? Does it mean the education got in finance from university? The seminars and workshops on saving and investment, the news regarding financial markets and its trends, macroeconomic variables of countries, Or the investment experience of investors? In the case of Pakistan where the literacy rate is low as compare to developed nations thus most of the investors are illiterate, they do not possess any business education degree, further the stock market investors who have finance knowledge do they apply their knowledge while taking investment decision? How the investors who not having finance and business education make investment decisions in a volatile market and end up with a sound gains instead of losses.

The current research is intended to empirically investigate the mediating impact of financial literacy on association between common behavioral biases and trade performance of individual investors from two perspective, the formal and informal financial literacy, formal financial literacy mean, finance education from university and knowhow of basic finance model like capital asset pricing model (CAPM), modern portfolio theory, diversification, risk return trade off, security market line, trend analysis, fundamental analysis mean and standard deviation calculations while informal financial literacy mean seminar and workshops on investment, financial news regarding stock market, Market updates by concern brokers through Mail, web and other sources, major macroeconomic changes in state and most dominantly the investment experience of investors.

PROBLEM STATEMENT

According to efficient market hypothesis the current security prices reflect all available information and there is no chance for above or below average return. Hence there is a huge difference among returns of various investors in stock market. This tendency makes it necessary to investigate the factors responsible for such variation. In my opinion these are the behavioral biases that investors incorporate in their investment decisions leading to irrational investment and consequently inefficient market. There is a very little research work on the behavioral fiancé in Pakistan. Only a limited number of scholars in this regard advocate that financial literacy has a significant impact on minimizing the effect of behavioral biases in investment decision making (Hsiao & Tsai, 2018;

Skagerlund, Lind, Strömbäck, Tinghög, & Västfjäll, 2018) But in real life and according to some scholars the financial literacy leads investors to irrational behavior (Hassan Al-Tamimi & Anood Bin Kalli, 2009). If the investors follow their financial knowledge they are expose to behavioral biases like overconfidence if they do not follow financial literacy, how investor will decide about their investment. the current study will investigate the incorporation of behavioral biases in investment decision making of individual investors with moderating role of financial literacy as will which is the major contribution of current study.

SIGNIFICANCE OF RESEARCH

The current research study contributes in various ways to theoretical and practicable perspective of behavioral finance. First the research contributes to theoretical aspect in identifying the gap that financial literacy has mediating role in relationship between behavioral biases and investment returns. Seconds the study explores the positive and negative impact of financial literacy while the literature asserts only positive impact of financial literacy on investment returns. Furthermore, the research study splits the financial literacy in two types i.e. formal and informal financial literacy and investigate the impact of both separately. The research is of great importance to practitioner and stock market participant's i.e. individual institutional investors and stock broker. These investors can get benefited with this research as they will understand their investment behavior even they are finance literate or illiterate and the investment biases they incorporate in their decision.

Research Questions

1) Do investors incorporate behavioral biases in their investment decisions?
2) What is the impact of these behavioral biases on the investment returns of investors?
3) Do financially literate investors act more rational than financially illiterate investors?
4) What is the impact of informal financial literacy on the investment returns?

Objective of Research

The specific objectives the study is intended to achieve are as follows

1) To examine either the investors incorporate behavioral biases in their investment decisions
2) To understand the impact these common behavioral biases on the investment returns of investors.
3) To understand the behavior of formally finance literate and illiterate investors.
4) To examine the impact of informal financial literacy on the investment returns of investors.

LITERATURE REVIEW

Introduction

This section proposal represents the key theories on which the current research has been based. Further it curtly reveals previous empirical studies on the most common behavioral biases that investors encounter while taking investment decision. In last the conceptual framework and proposed hypothesis are presented.

Theoretical Review

There are many theories that previous scholars have been attached and relate to behavioral finance in different context, the current research has been based on the following four theories, of which three

theories i.e. decision, heuristics and prospect theories describes the investment behavior of investors while the market efficiency theory describes both investor and the stock market as well. Brief discussions of these theories are given in following sections.

Efficient Market Hypothesis (EMH)

Eigen Fama 1970 proposed a theory called efficient market hypothesis (EMH) which mainly dominate the traditional finance paradigm. According EMH the current market prices reflect all available information, which means the prices are being determined by market agents who are rational and aware of bylaws thus considering the entire fundamental in their investment decision. The EMH also asserts that investor might not be rational at all but at least the markets are efficient (Barberis & Thaler, 2003). Moreover the market is assumed not only to predict the future but must predict it unbiased, the behavioral finance paradigm contradict and asserts markets are not informational efficient every time (Ritter, 2003).

Prospect Theory

proposed a theory which called prospect theory. Prospect theory has vital role in explaining the behavioral finance paradigm. The prospect theory is in contrast of decision theory on which the traditional finance has been based. argue that prospect theory is different from the classical theories of finance based on rational behavior. The prospect theory underlines that investors are not rational and they tent to act in a different way while expecting losses and gains, the investors value gain and losses differently as they remain too turmoil when expecting losses but do not feel as much happiness when expecting the same amount of gains thus for an ordinary investor the pain of losing ten dollars is double than the happiness of gaining the same ten dollars.

The investors do behave differently in the same situation if these situations are represented differently, ordinary investors will become more risk taker in order to avoid losses but the same investors will become risk averse when faced with a situation where there is a small guaranteed profit and high profit with some probabilities. This changing behavior is the core of prospect theory. A situation where investors are offered a sure gain and a gamble with probability to increase or decrease the sure gain the investors often chooses sure gain, but when the same investors is offered the sure losses and a gamble with probability of increasing or decreasing the sure losses the investors often chooses the gamble option instead of sure losses (Ross et al. 2008).

Behavioral Biases

The traditional finance known as standard finance has been pedestal on a range of principals, theories and model i.e. arbitrage pricing theory of Modigliani and miller (MM), Markowitz's portfolio theory, the capital asset pricing model (CAPM) by Sharp, Litner and Black and option pricing theory (OPT) by Black, Scholars and Merton. In view of the above theories the stock market and its agents are efficient systematic, rational and value maximizes. The EMH asserts that in efficient market the securities current prices reveal all available information, which means the investors considers all information regarding specific financial security and understand all the fundamental thus use it in estimating the fear value of security. The EMH assumes that stock market participants are rational while taking investment decision in a complex situation and abundant of information the investor must choose among different choices. The expected utility theory states that investors make rational

judgment and behave in a rational manner by comparing the available choices on the risk return criteria.

in 1970s just after the energy crises in united State (US) the two psychologist on the basis of their stock market study proclaimed that behavior market agents is not consistent with the assumption of traditional finance theories. In 1980 the behavioral finance emerged as a new discipline which converge the psychology and behavior into financial decision. The behavioral finance stands in contrast to EMH and assist in comprehending how and why investor behaves in certain way while investing in financial securities. According to) asserts that investors in stock market shows many behavioral biases of which the most common are representativeness, disposition effect, familiarity or home bias, herding, overconfidence, loss aversion and anchoring bias. – conducted a systematic Literature review of major publications in behavioral finance and concluded that it investment behavior depends on the situations but the most common biases the investor undergo are the herding, disposition effect, home bias and overconfidence bias. The most common behavioral biases that investor exhibit in uncertainty and when faced with complex and huge multifactor data are the representativeness, herding, loss aversion, overconfidence, Confirmation Bias, Self-Serving Bias, The Planning Fallacy, Choice Paralysis, We Prefer Stories to Analysis and The Bias Blind-Spot (Seawright, 2012).

Overconfidence

According to (Michael M. Pompian, 2006) the overconfidence bias make investors overestimate their knowledge, skill and experience while underestimating the risk and strongly believe they can control the event with their ability. (Shefrin, 2002) asserts that overconfident investors believe they are effective and efficient than what the investor actually is, the same scenario relate to knowledge when someone is educated he overestimate his abilities. It doesn't mean that overconfident people must be illiterate but the literate one is more supposed to be overconfident. The intuition can be made that financially literate people are more expose to overconfidence bias.

Herding

Herding bias is one that is almost most common of all biases that investors incorporate while deciding about investment options. Herding is the tendency of investors when they follow the crowd, or when investors get influenced of majority of investor's decision. In stock market when the investor finds best time to sell or buy particular stock and want to trade, feel a pressure which restraints investors to trade, this is actually the pressure investors gets from their peers. According to (Renard and Abbink, 2007) ordinary investors usually herd when they follow the stock analyst advice for investment, the level of herding depend on the current consensus in market and information updates.

Disposition effect

According to (Odean, 1998) the disposition effect impair the investment performance of investors, this is the main reason why this specific behavioral is more frequently investigated. The justification has been given prospect theory of (Kahneman and Tversky, 1979), and emotions (Shefrin & Statman, 1985) mental accounting (Shefrin & Statman, 1985) The disposition behavior has been studied in private investors (Dhar & Zhu, 2006) house owners (Genesove & Mayer, 2001), Professional stock market traders (Ferris, Haugen, & Makhija, 1988) market speculators (Garvey & Murphy, 2004) and

students (Weber & Camerer, 1998).

Financial literacy and behavioral biases

According to the financial literacy in investment can be define as the amount of knowledge regarding the statistic on personal financial management and is the major element of rational financial behavior. The financial literacy means the investor's capability to comprehend the philosophy of how actually money works, how the investors utilize it to derive as much as possible utility, how someone commit it to generate further money (Giesler & Veresiu, 2014) The financial literacy has a very vital role in investment behavior as the investors use their financial literacy as input in their decisions regarding savings, investment and credit behavior, the financial literacy is the main factor that illuminates why there is variations in investment decisions of numerous investor (Idris, Krishnan, & Azmi, 2013). A major part of the literature reveals that financially literate investors behave in a more financially rational manner (Hogarth & Hilgert, 2002); (Robb & Woodyard, 2011). On the other hand, however, the financial literate investors as having thorough knowledge of finance overestimates their skill and profession and are more expose to overconfidence, home bias which is harmful for investment principal amount primarily and secondary for investment returns (Mandell & Klein, 2009) The above literature asserts that financial literacy has mediating impact between behavioral biases and decisions but the impact is not known as there exist contrary opinion regarding the impact of financial literacy. Moreover, the financial literacy term has been used in a very wide sense as there is no adequate difference between investors having formal financial literacy from the university and the financial literacy investors derived in course of their trading activities. The current research is intended to investigate the impact of all the above behavioral biases on investment returns of investor's while splitting the financial literacy term in two parts formal financial literacy which means financial education got in university in formal setting and informal financial literacy the financial literacy and education got through experience, investment seminars, broker advisor, business news, E-mails and stock updates by various brokerage firm to their investors.

The behavioral biases investigated in developed nation by Kahneman & Tversky, (1979), Odean, (1998), Dhar and Zhu, (2006), Weber and Camerer, (1998) all these scholars asserts that majority of investors are incorporating these behavioral biases in their investment decisions. More over in emerging economies by (Idris, Krishnan, and Azmi, 2017) (Hogarth and Hilgert, 2002), (Robb and Woodyard 2011), and (Zakaria, Jaafar, and Marican, 2012) investigated the behavioral biases and proclaims that the investors are expose to these biases in decision making. The current study will investigate these behavioral biases in investment decision of Pakistani investors with the moderating role of financial literacy which is has not yet investigated by scholars in emerging economies, especially in Pakistan.

Research Hypotheses

The following hypothesis for the current study has been developed to be tested statistically.

- ***H1:*** the herding bias has an impact on trade returns of investors.
- ***H2:*** Disposition bias has an impact on trade returns of investors.
- ***H3:*** Overconfidence bias has an impact on the trade returns of investors.
- ***H4:*** The Financial literacy moderate the association between herding and investment returns
- ***H5:*** The Financial literacy moderates the association between disposition and investment

returns

H6: The Financial literacy moderates the association between overconfidence and investment returns

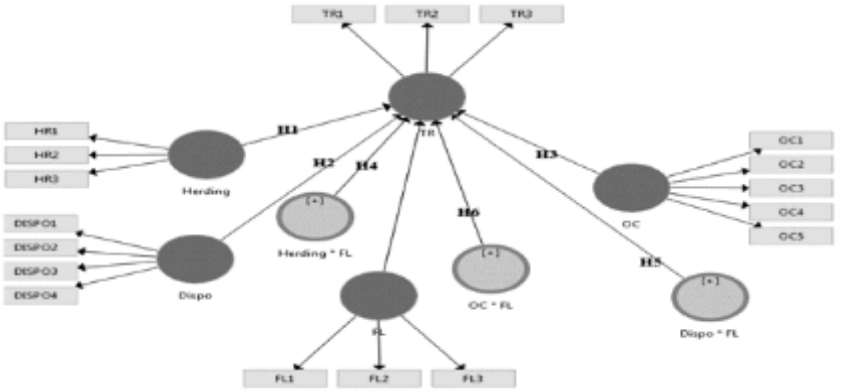

Figure. 1 Conceptual Framework

METHODOLOGY

The research is carried out under the objectivism ontological stance with positivist approach. The research nature and design are quantitative using deductive approach. As the study is based on the testing of prospect and heuristics theories using quantitative data. The research type is explanatory and exploratory as well because the study first explores the moderating impact of financial literacy and then demonstrate the cause effect relationship among various independents, dependent and moderating variable. The population of current study includes the equity investors of all KPK while the sample includes investors carrying out trading activities in various brokerage firms of KPK. Initially 500 questionnaires were distributed in investors, of which 410 were returned back. After refining the questionnaires there left only 353 questionnaires for analysis the remaining questionnaires were having missing values, some questions were having more than one response as well. The questionnaires are design on 5-point likert scale where 1 = strongly disagree and 5 = strongly agree. All the questionnaires has been adopted from previous researchers i.e. trade returns from (Le-Phuoc, Dao-Tran, Parreira, & Hauswirth, 2011) herding (Kengatharan & Kengatharan, 2014) disposition from (Rau, 2015), financial from (M. Van Rooij, A. Lusardi, & R. Alessie, 2011) and overconfidence from (Michael M Pompian, 2011). For data processing and analysis, the latest software Smart-PLS3. the current study uses two step approaches as discussed in the introduction of this chapter as well. According to (Hair, Ringle, and Sarstedt, 2011) the two-step approach for analysis is far better than the one step approach as the two-step model assumes that good constricts measures are embodied in a valid structural model. The measurement model exhibits the association between the latent variable and its constructs while the structural model reveals the association between dependent and independent latent variables. The measurement model provides the discriminant and convergent validity assessment while the structural model makes and provides the assessment of nomological validity. The measurement model provides the assessment of outer model while structure model provides the analysis of the inner model. The outer model is the indicators or items and the arrows connecting them with their respective latent variables are called outer model or measurement model while items or independent and dependent latent variables and arrows connecting them are called inner model or structure model. The statistical tools for analysis consist of

descriptive statistics to demonstrate the mean, standard deviation minimum and maximum value of responses, the structural model for testing the hypothesis.

DATA PROCESSING AND ANALYSIS

Table 1 below shows the demographics of respondents. 500 questionnaires were initially distributed among individual investors out of which 410 were collected back which constitute 82% response rate but these 410 responses were not valid as some questionnaires were not filled properly as discussed in previous section. After refining the collected data only 353 questionnaires were left valid for analysis. the table below shows that 93.77% of respondents are male while only 6.23% are female. This is because of the fact that Pakistan and specially KPK is male dominant society where female is not supposed to do trading activities. The age groups constituting the major portion of responses are from 36-45 years having 41.64% and from 46-55% having 51.27% of entire responses it is due to the fact these age groups are the responsible for their families, they have their own money for trading and have the required skill for trading as well. The other age groups i.e. 18-25, 26-35 and above 55 are having responses of 0.57%, 3.97% and 2.55% respectively. These are having low response because low age groups are students and do not have family and their own capital for trading while above 55 years are older now who have responsibility of families and required skill but they are unable to trade due to their age factor and week health. The marital status and education reveal that there are single, married and engage investors, the education level reveals that there is almost every level of education profile in respondents but the high school and under graduates are constituting almost the 65% response rate there are also bachelor and master investors as well but low in frequency and there is not even a single PhD. Demographic reveals that almost 85% respondents are having the stock trading experience from 3 to 10 years while 11% are having experience more than 10 years and the others having experience of less than 3 years. The 91.78% of respondents have attended stock market trading courses while 8.22% have not attended any course for trading stock.

Table 1: Demographic profile of respondents.

S. NO	DEMOGRAPHIC	SUB-GROUPS	FREQUENCY	%	CUM. FREQ
1	Gender	Male	330	93.77	93.77
		Female	23	6.23	1000.00
2	Age	1 (18 -25)	2	0.57	0.57
		2 (26 - 35)	14	3.97	4.53
		3 (36 - 45)	147	41.64	46.18
		4 (46 - 55)	181	51.27	97.45
		5 (more than 55	9	2.55	100.00
3	Marital Status	Single	95	26.91	26.91
		Engage	13	3.68	30.59
		Married	245	69.41	100.00
4	Education Level	High School and Lower	121	34.28	34.28
		Under graduate	107	30.31	64.59
		Graduate	70	19.83	84.42
		Master	55	15.58	100.00
		PhD	0	0	0
5	Stock market Experience	Under 1 year	2	0.57	0.57
		1 - 3 years	14	3.97	4.53
		3 – 5 years	141	39.94	44.48

		5 – 10 years	157	44.48	88.95
		10 – 15 years	39	11.05	100.00
6	Invested amount	Under 20 Mill	137	38.81	38.81
		20 – 50 Mill	94	26.63	65.44
		50 – 100 Mill	56	15.86	81.30
		100 – 200 Mill	29	8.22	89.52
		200 – 300 Mill	18	5.10	94.62
		Above 300 Mill	19	5.38	100.00
7	Stock trading course attended or not?	Yes	324	91.78	91.78
		No	29	8.22	100.00

The collected data has been analyzed with Smart PLS 3.2.4 using Partial least square structural modeling (PLS-SEM). The smart-PLS is more robust compare to other methodology. It requires fewer assumption than Ordinary least square regression model. The Smart-PLS does not require normality of data nor it has problem with low sample size (Henseler et al., 2014) The PLS-SEM is a two steps analysis the first one is assessment of measurement model and the second is structural model (Esposito Vinzi, Chin, Henseler, & Wang, 2010; F. Hair Jr, Sarstedt, Hopkins, & G. Kuppelwieser, 2014) The measurement model assesses the convergent validity and discriminant validity of outer model. The convergent validity is a measure of correlation among the construct of latent variable and measured with Cronbach's alpha while factor loading, composite reliability (CR), average variance explained (AVE) measure the discriminant validity of outer model.

Table 2: Factor loading

Items	Factor Loading	Cronbach's Alpha	Composite Reliability CR	AVE
DISPO1	0.741	0.728	0.831	0.552
DISPO2	0.693			
DISPO3	0.751			
DISPO4	0.783			
FL1	0.788	0.770	0.867	0.686
FL2	0.906			
FL3	0.786			
HR1	0.829	0.725	0.844	0.644
HR2	0.815			
HR3	0.762			
OC1	0.682	0.756	0.836	0.506
OC2	0.642			
OC3	0.802			
OC4	0.718			
OC5	0.701			
TR1	0.831	0.770	0.867	0.685
TR2	0.846			
TR3	0.805			

The table above reveals the factor loading, Cronbach's alpha, composite reliability (CR) and average variance explained (AVE). For a good fitted model, the cross loading must be ≥ 0.7 (Henseler, Ringle, & Sarstedt, 2012) all the above loading are satisfying this criteria except DISPO 2, OC1 and OC 2 these loading are less .07 but in rounding it is equal to 0.07 thus factor loadings are quite ok for further analysis. The Cronbach's alpha should be ≥ 0.7 Nunnally (1978), the composite reliability must be >

than 0.08 , and the average variance explained must be > 0.5 (Chin,1998; Fornell & Larcker, 1981; Hock & Ringle, 2006). All these criteria are quite satisfied as presented in the table above and hence it is concluded that model is having convergent validity.

Table 3: Discriminant Validity: Fornell-Larcker Criterion

	Dispo	FL	Herding	OC	TR
Dispo	**0.743**				
FL	0.424	**0.828**			
Herding	0.593	0.292	**0.803**		
OC	0.546	0.263	0.461	**0.711**	
TR	0.638	0.459	0.629	0.591	**0.828**

Note: The FLC are shown in diagonal cells

According to Fornell-Larcker Criterion each item must have more strong correlation with its latent variable than other latent variables. This Fornell-Larcker Criterion is reported at the top of each column and below this value are correlation coefficient of these items with other latent variable. The Fornell-Larcker Criterion values in all cases are greater than values below this criterion with asserts that according to Fornell-Larcker Criterion the model is having strong discriminant validity and reliable for further analysis.

Table 4: Discriminant validity HTMT Ratio

	Dispo	FL	Herding	OC	TR
Dispo					
FL	0.558				
Herding	0.804	0.377			
OC	0.710	0.303	0.564		
TR	0.848	0.591	0.831	0.718	

Note: The HTMT ratios are shown in diagonal cells

According (Henseler, Ringle, & Sarstedt, 2015) factor loading and Fornell criterion are acceptable and good measures of discriminant validity but still having some difficiencies which can be improved with Hetrotrait-Monotrait (HTMT) ratio. this ratio is actually the geometric mean of heterotrait-heteromethod correlations (the correlations of indicators across constructs measuring different phenomena) divided by the mean of the monotrait-heteromethod correlations (i.e., the correlations of indicators within the same construct). In a good fitted model, the heterotrait correlations lower than monotrait correlations. It means that the HTMT ratio should be less than 1 (Henseler, Ringle, & Sarstedt, 2015). The and Henseler et al., (2015) used the cutoff value for HTMT is .9 while the and uses the HTMT value .85. in the above table all the HTMT ration are less than .85 asserting the strong discriminant validity of model.

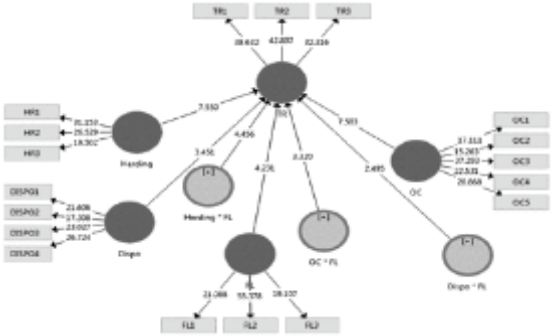

Figure 2: Conceptual Model showing R square, Beta and loading values

After the assessment of measurement model and determining the convergent and discriminant validity of model the next phase in PLS modeling is the assessment of structural model. In this sense the structural model for having good and consistent result has been run with 500 bootstrapping iterations to test the hypothesis. The result of structural model is given in following table with beta, standard error, t value, p values and final result of hypotheses acceptation and rejection.

Table 5: Assessment of Structural Model

Hypothesis	Std.Beta	Std.Err	T Statistics	P Values	Decision
H_2 Dispo → Trade returns	0.179	0.052	3.451	0.001	Supported
H_5 Dispo * FL → Trade returns	-0.109	0.044	2.495	0.013	Supported
H_1 Herding → Trade returns	0.339	0.045	7.559	0.000	Supported
H_4 Herding * FL → Trade returns	0.180	0.040	4.456	0.000	Supported
H_3 Overconfidence → Trade returns	0.291	0.039	7.503	0.000	Supported
H_6 Overconfidence * FL → Trade returns	-0.152	0.046	3.320	0.001	Supported

Note: 99% (0.01) and 95% (0.05) confidence levels

FINDING AND DISCUSSION

Table 5 above shows the hypotheses testing and their respective results. The first hypothesis H1 assumes a significant impact of herding on trade returns of the investors. The structural reports in above table support this hypothesis ($\beta = 0.339$, t-value = 7.559, $p < 0.05$) showing that herding has strong positive impact on the trade performance of investors. These results are align with (Hirshleifer and Teoh, 2003), (Krugman, 2009) this tendency can be explained in Pakistani context in the words of (M. Baker and Wurgler, 2007) who asserted that investors tends to follow other investors in their trading because the investors are risk averse and they want to be as good as their peers. Further the investors herd behavior is an evidence that small and unexperienced investors normally follow smart and experienced investors to earn the returns like smart investor.

The second hypothesis assumes significant impact of disposition effect on trade returns of the investors. The statistical reports support this hypothesis as well ($\beta = 0.179$, t-value = 3.451, $p < 0.05$). this result shows that investors sell winning stock quickly and keep on holding their losing stock without the assessment of intrinsic value of stock. These results are in line with the findings of (Shefrin and Statman, 1985) who stated that investors want to realized quickly the gains from trading

but are reluctant to realize their losses thus sell winning stock quickly and keep on holding the losing stock. According to (Summers and Duxbury, 2012) emotional forces like regret are the main driver of disposition effect. This effect is confirmed for professional traders (Garvey and Murphy, 2004) private investors (Odean, 1998; Dhar and Zhu, 2006), students (Camerer, 1998) and house owners (Genesove & Mayer, 2001).

The third hypothesis assumed a significant impact of overconfidence on the trade returns of investor. The result of structural model supports the H3 ($\beta = 0.291$, t-value = 7.503, $p < 0.05$). this means the more the investor is confident the profitable his trading will be. The results are align with asserted that the overconfident or even under confident behavior of investors are less likely to exist in long run but the moderate level overconfidence may exist in long run and outperforms the rational investors. According to the overconfidence investors may outperform the rational one but in certain circumstances not always. Further, Overconfidence may have a positive impact on the trade returns because overconfidence leads to more buying and selling transactions which boost trade returns than the low amount of transaction (Anderson, Brion, Moore, & Kennedy, 2012) Odean (1998) further stated that overconfident investors usually hold a comparative riskier portfolio in comparison to rational investors having the same risk tolerance profile which leads to higher returns of the overconfident investor.

The fourth hypothesis is financial literacy moderate the association between herding and investment returns of the investor the statistics report in above table support this hypothesis ($\beta = 0.180$, t-value = 4.456, $p = 0.000$). this means that financial literacy reduced the impact of herding on trade returns of investment. Actually, these returns are the perceived returns and according to the perception of financially literate investors the herding is an investment bias which should be avoided thus financially literate investors herd less than illiterate investors. The literate investors herd in sense that they are following the Smart or big investors like financial institutions, mutual funds and pension funds whose decision are rational and not subject to investment biases. These results are in line with who asserted that the financial literacy is having a moderating role between herding and investment decision of individual investors. The result is having a good meaning in practical sense that when investors gets financial literacy they recognize their emotional discipline and investment biases thus reduces the influence of these factors in investment decision.

The fifth hypothesis is financial literacy moderate the relationship between disposition effect and trade returns. The results strongly support this hypothesis ($\beta = -0.109$, t-value = 2.495, $p = 0.013$). this means that after financial literacy the investors have changed their behavior as now they think the disposition effect to be negatively correlated to their trade returns which was having strong and significant positive impact on trade returns of investors. This supports the H5 that financial literacy reduces or avoid totally the impact of disposition bias in investment. These results are quite align with the findings of Moore who asserted that financial literate people are very good in planning for retirement, savings and controlling their expenses spending (Moore, 2003; Perry & Morris, 2005) financially literate people have sound plans for their retirement (Lusardi & Mitchell, 2007, 2008) and are very efficient in capital investment Stango & Zinman, 2009a, 2009b). The findings reveal that financial literacy has a strong positive impact on hopelessness and intentions for retirement plans. While (Beckmann, 2013)(Beckmann, 2013)(Beckmann, 2013)(Beckmann, 2013)(Beckmann, 2013) asserted that financial literacy has a positive impact on saving behavior of Romanian people. According to previous studies in Ukraine context reveals that financial literacy and wealth are positively associated which means as wealth increases the financial literacy also increases, they

further described that while financial literacy and wealth are directly correlated there is no impact of financial literacy on saving behavior of Ukrainian investors.

The last and sixth hypothesis is the Financial literacy moderates the association between overconfidence and investment returns. The results strongly support this hypothesis (β = -0.152, t-value = 3.320, p = 0.001). the beta, coefficient, t-value and p-value asserts that financial literacy moderate the relationship between overconfidence and trade returns of investors. In lay man language these results mean that investors now think the overconfidence as negatively correlated to their investment returns. Before financial literacy the investors were unaware of their emotional discipline and investment biases and were prone to overconfidence but after financial literacy investors recognized that overconfidence is an investment bias and harm their returns thus it is concluded that financial literacy has moderating role between overconfidence and trade returns of the investors. These results are aligning with the majority of research findings conducted on financial literacy impact on investment behavior. According to the survey participants who ware having low financial literacy ware prone to low saving, high problems with debt management, low planning for their retirement and ware employing high-cost mortgages and prone to poor investment decision. argue that good decision in financial matters can be achieved only if the pension schemes participants understand the operation of pension funds. argue that investors having financial literacy understand the risk, returns, investment portfolio and portfolio diversification which lead financial literate investors to make ration and informed investment decision and avoid irrational decisions based on stereotypes. Moreover, (Van Rooij, Lusardi, & Alessie, 2011)(Van Rooij, Lusardi, & Alessie, 2011)(Van Rooij, Lusardi, & Alessie, 2011)(Van Rooij, Lusardi, & Alessie, 2011)(Van Rooij, Lusardi, & Alessie, 2011) asserted that good investment decision is directly dependent on financial literacy as low financially literate investors always rely on their peers, broker, analyst and another group for their investment decision thus are more likely to make irrational decisions.

CONCLUSION AND FUTURE RESEARCH DIRECTIONS

The findings show that on average all the Pakistani investors are incorporating behavioral biases in their investment decision as the all the three biases i.e. herding bias, disposition effect and overconfidence bias have significant impact on trade returns of the investors according to the individual investor's perception. Second the financial literacy has moderating role between these behavioral biases and trade returns of the investors as the magnitudes of impact has been reduced after financial literacy for all variables but between disposition effect, overconfidence bias and trade returns the financial literacy totally moderate the association because the coefficient of Dispo * FL and Overconfidence * FL is negative. This show the negative perception of investors regarding the association between disposition effect, overconfidence and trade returns. These association was positively significant before financial literacy. On the basis of these finding it is recommended for the individual investors to be aware of their emotional discipline, behavioral biases, social factors, greed and fear and cognitive illusion for value creation and achieving their investment objective. It is further recommended that aforementioned factors and biases can be overcome with having financial literacy. If the investors are more financially literate the more he will be insulated from these biases. On the basis of current study, it is also recommended for future research to identify the other debiasing techniques like financial literacy in current study. Further these biases could be studied with moderating role locus of control as well.

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