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Impact of Overconfidence on Investor's Investment Decision: Moderating Role of Risk Perception and Religiosity-A Survey of Pakistan Stock Exchange

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ABSTRACT

The principal objective of the study is to find out the impact of overconfidence on investor's investment decisions and to know whether risk perception and religiosity moderately affect the relationship between the overconfidence and investor's investment decision. Data is collected through a well-structured questionnaire. Systematic sampling is used, and the sample size is 156. Statistical results indicate a significant impact of overconfidence on investor's investment decisions. For the moderating part of the model, however, there is no empirical evidence of religiosity and risk perception as a moderating effect. Thus, the study depicts that there is an impact of overconfidence on investor's investment decisions, but there is no moderating impact of religiosity & risk perception. The review is useful for the brokers, investors in making decisions regarding the buying and selling of stocks, and also for entrepreneurs. This study is also exclusive and has greater importance as the role of religiosity and risk perception does not imply together before in the Pakistani stock market. The current research is also constructive for the scholars to further study the impact in a different context with further modified variables.

JEL Classification: *G4, G11, Z12, Z23*

Keywords: *Overconfidence, Risk perception, Religiosity, Pakistan stock Exchange.*

INTRODUCTION

Humans use knowledge to tackle routine life decisions. The modern knowledge suggests that the knowledge base is not the only resource that guides human in decision making. They are prone to certain biases that are part of their personality and grow gradually with time. These biases are behavioral in nature and result in poor performance in case of financial decisions. These biases tend to increase as a human is prone to shortcuts. Shortcuts (i.e., heuristic) concept was initially put forwarded by Tversky and Kahneman (1991), which indicates investors do not act rationally all the times (Babajide & Adetiloye, 2012). One of the heuristics that this study is taking into consideration is overconfidence. It is defined as "the persistent overvaluation of the own investment decision" (Dittrich, Güth & Maciejovsky, 2005). The overconfidence bias creates an assumption that someone is better because of over-reliance in self-skills and assigning less weightage to other information; thus, it has a negative effect on decisions. Many professionals are overconfident in their profession (Cooper et al., 1988).
The crash of the US stock market in 1987 and 2008 depicts that investors are not rational at all

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times; some behavioral biases occur, and one of them, which is more powerful and influence investor's decision is "overconfidence" (Humra, 2014). Overconfidence is one of the most studied behavioral biases (D'Acunto, 2015). Overconfident people make judgments that are more extreme than they should have made otherwise (Zacharakis & Shepherd, 2001). For finance-related decisions, an investor needs to have an awareness regarding risk aversion and financial responsibilities (Renneboog & Spaenjers, 2012). Finding evidence of overconfidence is not that simple. Therefore, measuring overconfidence for empirical analysis becomes cumbersome. Few features separate overconfident investors from others. Overconfident investors give credit for their success to their skills and blame their failures to their bad luck. Moreover, they tend to trade more, so higher trade frequency is another way to see the overconfidence aspect of investors. Overconfident investors have seen regular trading and they underestimate the risk that is associated with the stock (Odean, 1999). The frequency of trading can easily explain how overconfident an investor is. Mostly they keep an eye on higher returns and make use of mental short cuts for regular trading (Chang, Chen, Chou, & Lin, 2008). Not all investors are overconfident. Individual investors are irrational, emotional; however, institutional investors are more coherent and use significant strategies in trading and they less dispose of any biases (Grinblatt & Keloharju, 2001). Performances of individual stock investors are poor as compare to institutional investors (Locke & Mann, 2005). Psychologists believe that culture, belief system, knowledge, gender, and experience tend to impact overconfidence as well. Cognitive biases depend on the person's gender, such as men, who are said to be more overconfident as compared to females (Barber & Odean, 2001). According to Rokeach (1968), the beliefs and attitudes that are more concerned with one's personality are termed as Belief system theory. Most people are not competent in discovering biases in themselves, which they can easily detect in others; this is people's overconfidence in them (Dunning et al., 1991). The experienced investors make fewer mistakes; this is the fact that why they act more rationally. According to Korniotis and Kumar (2005), experienced investors trade less frequently, and they keep a less risky portfolio. The current study aims to check the impact of overconfidence on decision making while considering religious (i.e., belief system) and risk perception factors. This study offers new insight since Pakistan is a country where most people have a belief system, and they seem to follow it. The current study presents a model where the impact of a belief system on biasness (i.e., overconfidence) is analyzed that may add an understanding of overconfidence and financial decision making. The study assessed the literature and found the following variables that are concerned with the present study.

LITERATURE REVIEW

Overconfidence

Busenitz and Barney (1997) have defined overconfidence as "a tendency to overestimate the probability of being right." Zacharakis and Shepherd (2001) expressed overconfidence as a propensity to overvalue the probable occurrence of any set of events. Further, they stated that people naturally tend to recall past successes more than their failures, which may give rise to overconfidence as well as increasing the chances of repeating similar investment mistakes. According to Griffin and Varey (1996), the inclination towards overconfidence for the one's preferable outcome is referred to as optimistic overconfidence. Whereas, the other overconfidence involves knowledge overestimation to substantiate the decision that they have made. Zacharakis and Shepherd (2001) asserted that both types of overconfidence proposed by

Griffin and Varey (1996) leads to a poor decision. Dittrich, Guth and Maciejovsky (2005 analyzed overconfidence with investment decisions and found task complexity & greater risk perception are the real cause for increasing overconfidence. D'Acunto (2015) investigated the overconfidence of male and female investors in their investment decisions under risk and explained that overconfidence could impact two types of decisions. He stated that investors first decide either to invest or not to invest (extensive margin), and then they decide about how much money to spend (intensive margin). It is argued by Zacharakis and Shepherd (2001) in their study about venture capitalist investors and their investment decisions that overconfidence itself does not necessarily lead to an incorrect decision; instead it is a bias which slows down learning of the investor as being overconfident they are less likely to think about all relevant information thoroughly, and therefore improvement in decision-making process is halted. Investors exceedingly rate their own investment choice and feel hesitant to switch to any other investment opportunity (Dittrich, Güth & Maciejovsky, 2005). Perfect Judgments are based on the least confidence, while too many confident judgments are become most overconfident (Griffin & Varey, 1996). On the contrary, D'Acunto (2015) argued that overconfidence makes investors better off in many states of the world and hence is a trait that might survive over time.

Kahnman and Tversky (1991) has given the concept of Prospect theory which is best to describe decision under risk and uncertainty where an individual choice based on gain & losses according to the some reference point in time which explicitly defines that an investors are risk-averse, due to which they can be overconfident in their own decisions, this can be more investigated and identified by Moore and Healy (2008) where they define overconfidence with respect to three measures 1) overestimation; which depicts how an individual reveal overconfidence in predicting their own performances 2) over placement; where an individual compare personal preferences with others lastly 3) over precision; how accurate an individual predict uncertainty.

Barber and Odean (1999) analytically studied overconfidence as Daniel et al. (1998) depict that most investors who are more overconfident show overreaction to private signals, whereas public signals are observed under reaction who involve in excessive trading (Biais et al.2002). The empirical evidence supports that psychological factors influence financial decisions; investor's performance decline when they go online from phone-based trading (Barber & Odean, 2001b). On the contrary, De Bondt and Thaler (1995) investigated portfolio decisions attractiveness by observing the differences of a median portfolio, own portfolio and professional portfolio, and results found that professional and median portfolio have an edge on own portfolio and explained the concept of over and under-confident investors. An overconfidence and investment decision shows a positive relationship (Ullah, Ullah & Rehman, 2017). Hence, the study foresees,

H1: Overconfidence has a significant impact on investor's investment decisions.

Religiosity

Besides overconfidence, investment decisions may also be explained by another factor, such as religiosity. Religion can have a significant impact on economic phenomena (Czerwonka, 2014; Peifer, 2010;). Religion is derived from the Latin word "religio" which strengthens the bond of humanity with human power (Hill et al., 2000). Shahzad et al. (2014) defined that

religion is a belief that individual practice extent on one's religious beliefs and values. Religiosity can be defined as the extent to strengthen and significance of one's religious life which is evidently observable in his overall behavior (Gunnoe & Moore, 2002). The view that religion plays a pivotal role in decision making has been established since Max Weber (Onyima & Ojiagu, 2017). The economic condition of people is closely connected with people's daily life, and religion has a vital role in it (Mansour & Jlassi, 2014). This variable has a tremendous impact on each other, and some of them make awareness about the zero impact of it. Religiosity lowers the rate of people's interest and investment decisions (Tahir & Brimble, 2011), and hence, religiosity affects an individual's investor's decisions in relation to risk and finance (Mahdzan et al., 2017). Investor's decision making and investment priorities are based on family, religious belief and social companies (Iqbal et al., 2014). A common religion may favor trade, but the presence of many religions preferred (Helble, 2007). Religious interaction has altered the investment decision of local investors (Tourani & Ingley, 2011). A marginal impact is observed of religiosity on the investment decision of customers (Jiang et al., 2018). Religion has a dimension that has some influence towards the individual decision making of people (Jamaludin, 2013). Investment choices of investors are considered financially risk tolerant but don't consider religion and religious perspective as significant (Jamaludin & Gerrans, 2015).

Pakistan is an Islamic country established in 1947 based on Islamic ideology. Islam is the dominant religion, with 96.28% of the population being Muslim, and the other 4% of the population follows Christianity (1.59%), Hinduism (1.6%), Sikhism (<0.1%), and other religions (Pakistan Bureau of Statistics, 2018). Investment decisions are influenced by religious considerations of individuals in a Muslim country (Shahzad et al., 2014). Al-Awadhi (2018) stated that religiosity has an impact on stock market speculation. In Pakistan, individual and institutional investors, listed companies, and the trading community can buy and sell listed companies' common stocks and other securities in a digital marketplace through Pakistan Stock Exchange (PSX). Kahneman and Tversky (1991) developed prospect theory, which states that individual underweight outcomes that abandon components that are taken into consideration by all prospects. Investment decisions made by people are their choices which are also susceptible to get directly impacted by or moderated by their view about risk inherent in an investment decision, their appetite for risk and their willingness to invest in a financial product based on their strong religious beliefs-"religiosity" (Hill et al., 2000).

Mansour and Jlassi (2014) argued that most of the literature has not taken into consideration how decisions are changed due to religious norms and beliefs. Religiosity is a crucial stimulator of investment decisions made by an individual by influencing cooperation, trust, ethical attitude, fairness, individual risk perception, and gambling attitude (Mansour & Jlassi, 2014). Worthington (1988) found that those individuals who are more committed to religion tend to have a different view based on their religious values than the people who are less committed to the faith. Most of the religious beliefs may interlink with those factors that influence an individual economic choice (Shahzad et al., 2014). Mansour and Jlassi (2014) argued that personal financial decisions are affected by religion. Mathur (2012) emphasized that many researchers study religiosity as a single construct. Czerwonka (2014) surveyed 361 Catholic Polish investors and confirmed that religiosity has an impact on the willingness of investors in Poland. Peifer (2010) emphasized that investment in mutual funds that ingrained moral imperatives impact investor behavior in the USA. Renneboog and Spaenjers (2012)

found that being Catholic reduces ownership of stocks by 2.3%. Similarly, routine decisions made by people in Muslim countries are significantly impacted by their religious orientation (Shahzad et al.2014). Al-Awadhi (2017) observed that stock markets of those countries which are considered to have a high level of religiosity exhibit lower trading frequency and lesser market volatility during the Holy month of Ramadan. Referring to Islamic Shariah, the author asserted that unwarranted speculation is prohibited in Islam since it entails high risk. Religiosity increases during Ramadan when Muslim investors abstain from speculation in non-Islamic stocks (Al-Awadhi, 2017).

In the context of Pakistan, Shahzad et al. (2014) studied the relationship between religious beliefs and investor's decision-making by using the analytical hierarchy process (AHP) and found no significant association between investor's decision and the religion. As per Shariah principles of Islam, economic objectives of a Muslim should comply with Islamic injunctions, which manifests that no commercial activity is to be carried out at the loss of other individuals (Ariff & Mannan, 1982). In the context of Nigeria, Onyima and Ojiagu (2017) argued that money advice given by religious leaders have a significant impact on the financial habits of their followers. However, few authors draw round a part that establishing investor's preferences based on emotions and behavior where a religious belief plays an important role (Mansour & Jlassi, 2014). There is a lot of scope to investigate the impact of religiosity as moderating variable to dictate investor risk-taking behavior by shaping his risk perception and limiting his over-confidence, thus impacting the overall investment decision. Therefore, the study predicts;

H2: Religiosity effectively moderates the relationship between overconfidence and investor's investment decisions.

Risk Perception

The decision to take risk or not depends on the perception of risk, for that it is necessary to identify what are the factors that variations in perception of risk, few scholars believe that behavioral biases reduce the risk perception of an individual (Cooper et al., 1988). Theses biases have an impact on the perception of risk, which influences individuals' decisions; this depicts that risk perception mediates the relationship of behavioral biases and investors' judgments. It depends on individual risk perception rather than on propensity of risk; that's why an individual feels a need to decide to start a new business enterprise. According to Nutt (1993), when an individual has similar situations, they perceived the same risk. On the contrary, Simon et al. (1999) argued that individuals interpret information on the bases of their limited information capacity, through which cognitive biases may occur, which have a direct effect on individuals' risk perception. These biases implicitly lower the perceived level of risk; this further needs to explore (Simon et al., 1999). Thus, the study predicts,

H3: Risk perception moderately affects the relationship between overconfidence & investor's investment decisions.

Khursheed senior analyst at Topline securities raises his voice to State bank of Pakistan to revise its policies about bases point because investors and brokers having a fear of the situation that is similar to 2008 crises, Hence, investor's are reacting emotionally and irrationally, this is the reason GDP growth is slower as compare to fiscal year 2017, many investor's claim that

government is responsible for all the failures, while they are confident in their abilities and skills (Khan et al., 1986). The worst decline has been observed since 15th august 2017 in the stock market, even funds managers of banks were upset due to minor inflation (Bahoo et al., 2018). Stock market decline & economy of Pakistan were shattered due to the pending decisions on the case of Nawaz Sharif, mostly blue chips in stocks seems red and reached only to the lower level, the decrease in KSE-100 index from 41000 points to 40345 points made the most significant loss of Rs. 233 billion were recorded (Afzal & Habib, 2018). Hence, the study finds that this problem persists for centuries and still not confine with any possible solutions; yet, investors show overconfident behavior while making any decisions. As overconfidence is one of the cognitive biases that impact on investor's decision, whether the decision is related to buying and selling stocks, whether the decision is similar to invest in bonds, whether to invest in real estate, whatever the decision is the overconfidence always have an influence. Sometimes it affects negatively, sometimes it affects positively, it mainly due to perception of risk, it perhaps due to religious beliefs. Risk perception also plays a significant role in investor's decisions, some investors are risk-averse & some are risk lovers, those who always ready to take the risk, they frequently trade as compare to those who have a fear of losing money, they perhaps risk-averse. A rational investor may sometime overreact just because of overconfidence, and sometime religious beliefs empower an investor to become confident in his/her decisions. To see the moderating role of religiosity and risk perception on the relationship of overconfidence and investor's resolutions, this research attempts to put in question, are religiosity and risk perception moderately affects or not? Many investors are suffering from their own behavioral biases; thus, this research will help investors to consider these factors during investment decisions for saving their time and money. Therefore, there is a need to further extant the literature by conceptually and empirically investigating the phenomenon.

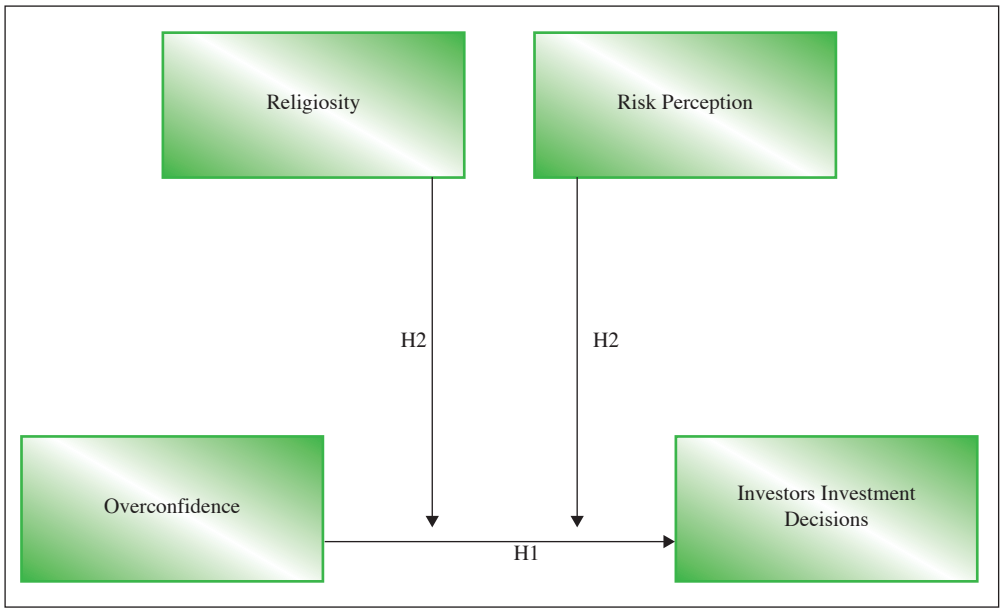

Figure 1: *Conceptual Research Model*

The above framework illustrates that Overconfidence is an independent variable. Investors investment decision is dependent variable, whereas religiosity and risk perception has taken as moderating variables. Thus, to study the study of the effects adopts the following methodology.

METHODOLOGY

The study is quantitative and is based on a cross-sectional survey. Data is collected through a questionnaire. The universe of the population is all brokers of Pakistan stock exchange whereas the target population is brokers of Karachi only. Probability sampling has chosen, in which systematic random sampling technique was considered easy and helpful for collecting data as a population is known. The study systematically identified its sample size, and it consists of N=156 out of 340 population, for which study adopted a questionnaire of (Grežo, 2018) Waseem et al. (2018) and Simon et al. (1999). The study uses SPSS & ADANCO both to see the differences, but the simplicity of regression analysis has quite easy to determine and explain the impact of an independent variable on the dependent variable. The study has also applied Andrew F Hayes test of moderation of model 2 to find whether religiosity and risk perception act as a moderator in explaining the relationship of overconfidence and investor decision. For assessing the present data, the study has considered the subsequent measures.

Measures

The questionnaire instrument is based on a five-point Likert scale where 5 considers strongly disagree, 4 considers disagree, 3 considers neutral, 2 considers agree and 1 consider strongly agree. The questionnaire comprises 5 sections where section 1 consists of demographic variables, which are gender, level of education, management, marital status, and age. Whereas section two depicts 7 item scale of Overconfidence which was developed by (Simon et al. 1999), section three consist of 5 item scale of Religiosity developed by (Waseem et al. 2018) Section four consists of 14 item scale of Risk perception which was developed by Simon et al. (1999), lastly, fifth section consist of 6 item scale Investor's Investment decisions which was developed by Simon et al. (1999).

RESULTS & DISCUSSIONS

The reliability of the instrument has been checked through Cronbach's alpha shown in table 1below. According to Nunnally (1978) Cronbach alpha value, 0.6 or above is considered fit for further analysis. Table 1 reports the Cronbach alpha value above standard value (0.6) for all constructs of study. The reliability of the adopted questionnaire & this study is quite the same.

Table 1.
Reliability Statistics

Variables	Reliability
Overconfidence	0.60
Religiosity	0.773
Risk Perception	0.858
Investors Investment Decision	0.70

Regression Analysis

F-test is statistically significant. Thus, the study results indicate that the model can explain a substantial amount of variance in the investor's investment decision.

Regression analysis was run to test the impact of overconfidence on investor's investment decisions to fulfill the primary objective of the research. Overconfidence is taken as an independent variable, whereas investor's investment decisions taken as the dependent variable. R- square value 0.189 shows that 18.9% variation in investor's investment decision can be explained through overconfidence.

Table 2:
Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.076	.439	4.728	.000	
Overconfidence	.072	.094	.061	.762	.000

R^2 = 0.189, Adj R^2 =0.172
F= 11.700, Sig Value= .000

The empirical results indicate a statistically significant impact of overconfidence on investment decisions. The relationship is positive which means overconfidence increases the chances of choices.

For moderation, the part study used moderation test using Andrew F Hayes process (i.e., model - 2) Through regression. The results of moderation are as follows;

Main Effects:

Study has found that overconfidence can predict investor's investment decisions b= 2.2, t (149) = 2.7, p= .0071. Whereas religiosity and risk perception does not predict overall investor's investment decisions,

Interaction Effects:

Interaction 1 OC_Avg x RP_Avg b=-.14, t (149) = -.66, p=0.5072, Addition to the interaction F(1,149)=.44, p=.5072, Change R2 = 0.0023, Interaction 2 OC_Avg x Religios b=-.42, t (149) = -1.8, p=.0672, Addition to the interaction F(1,149)= 3.39,p= 0.0672, change R2= .0177. The study shows that religiosity and risk perception are not statistically significant hence their role as moderating variables cannot be ascertained.

DISCUSSION

Bounded rationality, humans only process imperfect information quickly when it compares with the standard paradigm of reality (Lipman, 1995). His argument was based on Fershtman and Kalai (1993) where a manager and firm only consider and believe in limited information and market. Rubinstein (1993) explained that buyers are heterogeneous in understanding

intricate pricing and sellers uses this verity in availing profits which depicts that overconfidence plays a central part in investor's investment decision. The current paper findings suggest that overconfidence can predict investor's investment decisions, the results resemble with Busenitz and Barney (1997), Griffin and Varey (1996) and Dittrich et al. (2005).

CONCLUSION

The principal inspiration of the study was to find the impact of overconfidence on investor's investment decisions by analyzing the moderating role of religiosity and risk perception. Data were collected through a questionnaire. The findings are consistent with Barber and Odean (2001), Dittrich et al., (2001), (Grežo, 2018), and Qasim et al., (2018). Thus, the study supports the first hypothesis. As far as religiosity is concerned ($p > 0.05 = .761$) which suggests that religiosity doesn't have any significant relationship with investors decisions, further interaction between overconfidence and religiosity is also insignificant ($p > 0.05 = 0.0672$), results are consistent with Brimble et al., (2013), Jamaludin (2013), Bailey and Sood (1993) and Mokhlis (2009) while it contradicts with Waseem et al., (2018). The study also concluded that risk perception has a significant impact on investor decision ($p < 0.05 = 0.00$) in regression analysis results are consistent with Simon, Houghton & Aquino (1999), whereas Interaction between overconfidence and risk perception is insignificant ($p > 0.05 = 0.5072$). Thus, the study did not support hypothesis 2 & 3 and concluded that religiosity and risk perception does not require a moderator in predicting the relationship between overconfidence and investors investment decision. The present study has particular limitations such as the study is based on Pakistan stock exchange, and only brokers of Karachi city are taken for analysis. Thus, the study recommends furthering investigating the model into entrepreneurs & other financial advisors.

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