



The Influence of behavioural biases on Investment Decision Making: A Moderating Role of Religiosity among Pakistani Investors

Waseem-Ul-Hameed¹, Saeed Ahmad Sabir², Shazma Razzaq³, Dr. Asad Afzaal Humayon⁴

Abstract

This research study evaluated the extent to which psychological factors (overconfidence, confirmation bias) effect on investor's decision-making process. The ultimate objective of the current study is to investigate the effect of psychological factors on investor investment decision making. To achieve this objective, this study used quantitative approach and cross-sectional research design. Survey was used to collect the data. Questionnaires were distributed among the individual investors and brokers of stock exchange in Pakistan. Smart PLS 3 was used to analyse the data. It was found that overconfidence and confirmation bias have significant effect on investors investment decision making. Moreover, it is found that religiosity has moderating effect between the psychological factors and investors' investment decision making. Majorly, the current study contributed by investigating the moderating role of religiosity between psychological factors and investor investment decision making.

Keywords: Investment decision making, Overconfidence, Confirmation bias, religiosity.

1. Introduction

Behavioural finance is one of the latest strategies for investment decision making that have evolved in reaction to the problems experienced by the conventional model (Kumar & Goyal, 2016). In widespread, it claims that some traders are not entirely rational at the time of making investment decision making (De Bondt *et al.*, 2015). Behavioural finance also explains the mode in which various psychological forces impact on investors' behaviour as well as managers' behaviour at the time of making different investment decisions (Ansari & Moid, 2013; Muradoglu & Harvey, 2012; Slovic, 1972).

Rationality of investors' behaviour remained at the centre of researchers since publication of Efficient Market Theory. There is a lot of criticism on the idea of investors' behaviour rationality (Nofsinger, 2001) as rationality of investors' behaviour is hard to describe, because it is often unpredictable (Oprean, 2014). Behavioural finance offers the signal that human behaviour is reversible which could be predicted (Dhiman & Raheja, 2017; Forbes, 2009; Subrahmanyam, 2008). Many behavioural biases in which investors indulge at the time of investment have been recognized as significant in providing a better understanding of individual investors' behaviour (Kumar & Goyal, 2016). Most of the investors' behaviours influenced by overconfidence (Dittrich, Güth, & Maciejovsky, 2005; Statman, Thorley & Vorkink, 2006) and confirmation biases (Kosnik, 2008).

Investors, who are influenced by overconfidence bias, exaggerate their skills and capabilities, understated the risk and overstated their capability to govern investments (Glaser, Nöth, & Weber, 2003; Koehler & Harvey, 2008). However, overconfident investors exaggerate the facts and figures that they have collected, overstate their own predictive abilities, ignore the actual facts and take the irrational risk, based on the reason (Tan, Tan, & Teo, 2012). Investors affected by confirmation bias confirm their existing beliefs and authorizes the prior ideas (Shefrin, 2007b). Overconfidence and confirmation biases affect investors' investment decision making and change mind-set of investors. Religion is also one of the important factors which influence the investors' behaviour (Essoo & Dibb, 2004; Naughton & Naughton, 2000).

Although several factors have been studied in the previous researches, but no prior attempt has been made to examine the impact of religiosity on the relationship of overconfidence and confirmation biases with investment decision making, especially in the context of Pakistan. Therefore, it is a need to understand the impact of overconfidence, confirmation bias on investment decision making and how religiosity moderates the impact of

¹ PhD Scholar, School of Economics, Finance and Banking, College of Business; Universiti Utara Malaysia, expert_waseem@yahoo.com

² PhD Scholar, School of Economics, Finance and Banking, College of Business; Universiti Utara Malaysia, sasabir422@gmail.com

³ National College of Business Administration & Economics (NCBA&E), Bahawalpur, Pakistan, Shazmarazzaq4@gmail.com

⁴ COMSATS Institute of Information Technology, asadhumayon@ciitvehari.edu.pk

overconfidence and confirmation bias on investment decision making. These are the gaps in the body of knowledge of behavioural finance which this study seeks to address.

To accomplish the above we conducted the research this research. The ultimate objective of this research study is to examine the impact of religiosity on the relationship of these behavioural biases with investors' process of financial decision making. According to authors' knowledge, this is a pioneer study to examine the influence of religiosity on the relationship of behavioural biases and decision making in Pakistani stock market. The findings of current study might be extremely significant in attaining a better understanding of investors' behaviour and can serve both academics and practitioners.

2. Review of Literature

The literature review is concentrated on the empirical and theoretical studies on behavioural biases and their impact on investment decision making that are considered for current study.

Behavioural finance considers that human behaviour is influenced by emotions as well as cognitive errors at the time of investment decision making decision. These emotions and cognitive errors are behavioural biases that influence the behaviour of investors. In current study, we have tried to describe the relationship between two behavioural biases, namely overconfidence, confirmation bias and investment decision making of investors.

Overconfidence is a behavioural bias in which investors have unjustified belief on their cognitive abilities, assessments and knowledge (Pompian, 2011). Overconfident investors exaggerate their abilities and information while undervaluing the several risks connected with the investment. Usually, overconfident investors overestimate their personal information indications whereas overlooking the widely available information (Daniel, Hirshleifer, & Subrahmanyam, 1998). Kumar and Goyal (2016) argued that overconfident investors at time of searching information rely on their past investment experience and become overconfident and overlook actual facts. Overconfident investors get involved in unwarranted trading. Similarly, Barber and Odean (2000) found that overconfident investors, trade in large amount and because of the too much trading, returns before deduction of transaction cost was average, while return after deduction of transaction cost was very poor. Nofsinger (2017) argued that overconfident investors misinterpret to the information and overstated their abilities and skill when they analyse information regarding investment and made wrong judgment regarding the return of investment.

Confirmation bias proposes that investors unwillingly recall those stored information that support to their agenda rather than trusting on acquire and use of new information in decision making (Devlin & Billings, 2018). Confirmation bias is a cognitive error that affects the understanding of investors regarding information in such a way they confirm the previous ideas while avoid from explanation of information that disapprove prior beliefs (Shefrin, 2007a). Bogan and Just (2008) collected data of 2,333 peoples to investigate the existence of confirmation bias in in the behaviour of actual corporate executives. They concluded that higher executives were less likely to absorb the new information as compare to non-executives. Bashir et al. (2013) examined the impact of behavioural biases on investor's financial decision making. They found that investors affected by Confirmation bias at the time of decision making. Similarly, Onsomu (2014) collected data from the investors of Nairobi Securities Exchange for investigating effect of behavioural biases on investors' decision making. The results of this study indicated that investors were affected by Confirmation bias.

On the other hand, religiosity is another factor which affects the decision-making process of an investor. Most of the Muslim investors, at the time of making investment take into consideration whether this investment is according to Islamic laws or not. According to Essoo and Dibb (2004) religion works as building blocks on which persons shape their manners and attitudes. Religious principles and responsibilities regulate the choice of peoples. Peoples acts according to their religious beliefs in choosing financial, cosmetics, food and medical associated products (Essoo & Dibb, 2004). Among all the social factors that have emotional contact with the life of its believers, religion is one of the most important factors. Religiosity acts as an accountant which combines, divided and merge societal groups (McCullough & Willoughby, 2009). According to Keister (2003), saving and investment activities are potentially determined and deduced by religious principles because religiosity has philosophical influence on the customs, approaches, attitudes and ethics of believers. Influence of religiosity upon values, customs, attitudes, outlooks and behaviour of individuals have determined by various studies from a broad spectrum in academic disciplines.

Religiosity plays a vital role in making decision about the risk attitude Keister (2003) conducted a research study and argued that Jews invest in more risky investment and earns high return on financial assets as compare to non-Jews. Thus, the religiosity has influence on investors' investment decision making.

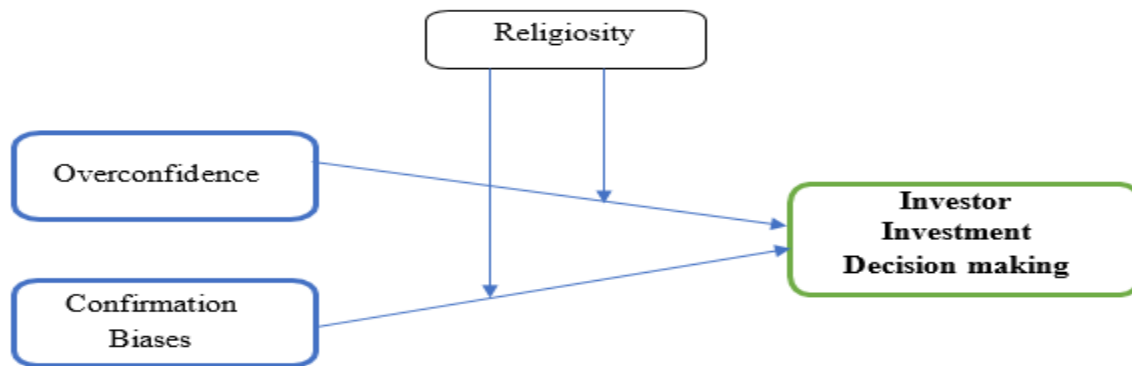


Figure 1. Theoretical Framework

- H₁:** There is relationship between overconfidence and investor's investment decision making.
- H₂:** Religiosity moderates the relationship between overconfidence and investor's investment decision making.
- H₃:** There is relationship between confirmation biases and investor's investment decision making.
- H₄:** Religiosity moderates the relationship between confirmation biases and investor's investment decision making.
- H₅:** There is relationship between Religiosity and investor's investment decision making.

3. Method

This study used quantitative approach and cross-sectional research design. Survey was used to collect the data. Questionnaires were distributed among the individual investors and brokers of stock exchange in Pakistan. The 5-point Likert scale was used to collect the data, where 1 represent the strongly disagree and 5 represent the strongly agree. Questionnaires were distributed through mail survey. Moreover, this study used convenience sampling technique for data collection.

Furthermore, according to Comrey and Lee (1992), 200 sample size is satisfying to proceed the analysis. Therefore, according to the series of Comrey and Lee (1992), 200 sample size has been selected. Nevertheless, Smart PLS 3 was used to analyse the data. Selection of Smart PLS 3 is based on low response rate. In the current study 200 questionnaires were distributed, however, only 70 responses were received in which 03 were incomplete and excluded from the study. Thus, 67 valid responses were utilized to analyse the data. Smart PLS is one of the suitable tool while analysing the data from low sample size. According to various studies (see, for instance, Reinartz et al., 2009; Rigdon, 2016) Smart PLS is most suitable for small sample size.

4. Data Analysis and Results

4.1 Measurement Model Assessment

Measurement model assessed through Smart PLS Algorithm. In this process reliability and validity was examined. Internal consistency through factor loading was examined to confirm the convergent validity. Moreover, Cronbach's alpha, composite reliability, average variance extracted (AVE) and discriminant validity was examined. Average variance extracted (AVE) and composite reliability should be more than 0.5 and 0.7 respectively (Fornell & Larcker, 1981; Hair et al., 2014). Furthermore, according to Hair et al., (2010), factor loading should not be less than 0.5. Figure 2 shows the measurement model assessment. The results of measurement model assessment are shown in Table 1. It is shown that composite reliability is more than 0.7, average variance extracted (AVE) is more than 0.5 and factor loading is more than 0.7 which confirm the measurement model assessment. Furthermore, the discriminant validity is shown in Table 2.

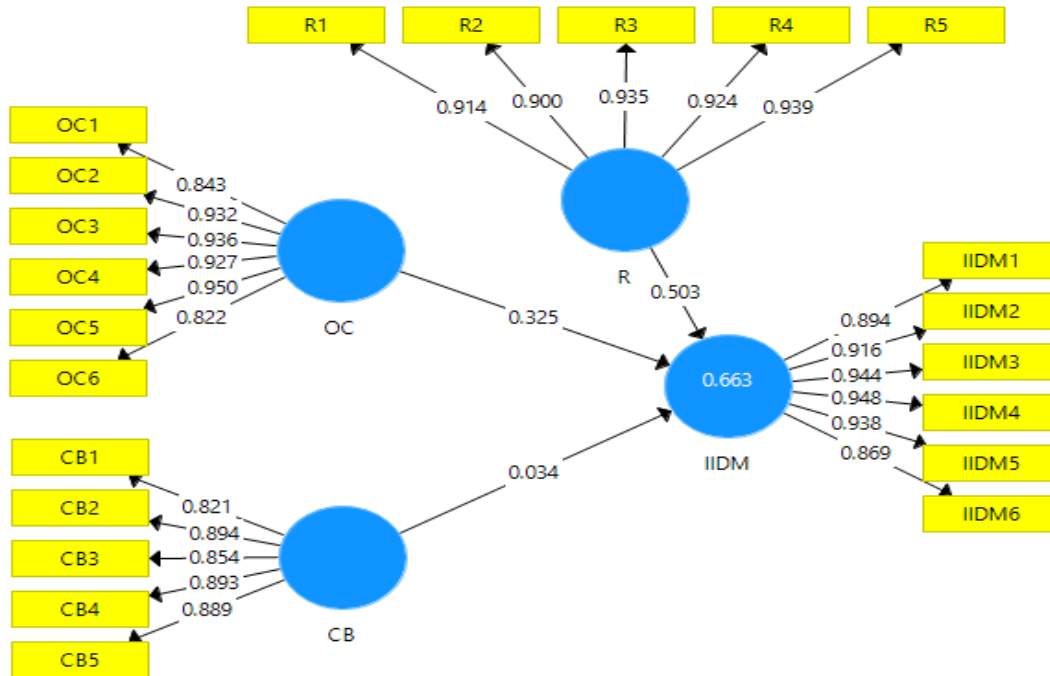


Figure 2. Measurement Model Assessment

Table 1. Convergent Validity, Cronbach's Alpha, Composite Reliability, AVE

Construct	Indicators	Loadings	Cronbach's alpha	Composite Reliability	AVE
Investor's investment decision making (IIDM)	IIDM1	.894	.964	.970	.842
	IIDM2	.916			
	IIDM3	.944			
	IIDM4	.948			
	IIDM5	.938			
	IIDM6	.869			
Overconfidence (OC)	OC1	.843	.952	.903	.835
	OC2	.932			
	OC3	.936			
	OC4	.927			
	OC5	.950			
	OC6	.822			
Confirmation biases (CB)	CB1	.821	.921	.950	.756
	CB2	.894			
	CB3	.854			
	CB4	.893			
	CB5	.889			
Religiosity (R)	R1	.914	.955	.965	.845
	R2	.900			
	R3	.935			
	R4	.924			
	R5	.939			

Table 2. Discriminant Validity

	CB	IIDM	OC	R
CB	0.871			
IIDM	0.720	0.919		



OC	0.859	0.751	0.903	
R	0.796	0.786	0.788	0.923

4.2 Structural Model Assessment

The structural model assessed through Smart PLS bootstrapping. Table 3 shows the results of structural model assessment. Table 3 only shows the direct effect without including the moderating variable. It is clear that all the relationship has t-value more than 1.96 and p-value less than 0.05. Therefore, overconfidence, confirmation biases and religiosity have significant relationship with investor's investment decision making. Thus, H₁, H₃, and H₅ are accepted. Moreover, the effect size (f²) of overconfidence is 0.17, for confirmation biases 0.22 and for religiosity it is 0.27. According to Cohen (1988), this effect size (f²) is moderate in all cases. Furthermore, Table 4 shows the moderating effect. In both cases moderating effect is significant.

Table 3. Structural Model Assessment (Results)

Hypothesis		Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Effect Size (f ²)	Decision
H ₃	CB -> IIDM	0.190	0.041	4.612	0.000	0.22	Supported
H ₁	OC -> IIDM	-0.372	0.135	2.746	0.006	0.17	Supported
H ₅	R -> IIDM	0.493	0.162	3.039	0.002	0.27	Supported

Table 4. Structural Model Assessment (Moderating Effect Results)

Hypothesis		Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-Value	Decision
H ₂	OC* R -> IIDM	0.317	0.161	1.966	0.049	Moderation
H ₄	CB* R -> IIDM	0.480	0.076	6.29	0.000	Moderation

Nevertheless, R-Square (R²) is 0.663 which is substantial. As according to Chin (1998), the R-squared value (R²) of 0.60 is considered as substantial. Additionally, Table 5 shows the quality of model by assessing the predictive relevance (Q²). The Q² should be more than zero (Henseler *et al.*, 2009).

Table 5. Predictive Relevance (Q²)

	SSO	SSE	Q ² = (1-SSE/SSO)
Investor's investment decision making (IIDM)	360.000	168.937	0.531

5. Findings

The results of the study found that overconfidence has significant relationship with investor's investment decision making with t-value 2.746. However, $\beta = -0.372$ which shows a negative relationship. It indicates that overconfidence is negatively influence the investor's investment decision making. Increase in overconfidence among the investors decreases the accuracy of investor's investment decision making.

Moreover, it is found that confirmation biases have significant positive effect on investor's investment decision making with t-value 4.612 and $\beta = 0.190$. It indicates that increase in confirmation biases increases the level of investor's investment decision making. Additionally, religiosity has also a significant relationship with investor's investment decision making with t-value 3.039 and $\beta = 0.493$ as shown in Table 3.

Finally, the current study examined the moderating effect of religiosity between the relationship of physiological factors (overconfidence, confirmation biases) and investor's investment decision making. It is found that religiosity has moderating role between overconfidence and investor's investment decision making with t-value 1.966 and $\beta = 0.317$. Figure 3 shows that religiosity decreases the negative effect of overconfidence on investor's investment

decision making. It indicates that religiosity has positive effect on investor's investment decision making by decreasing the negative effect of overconfidence.

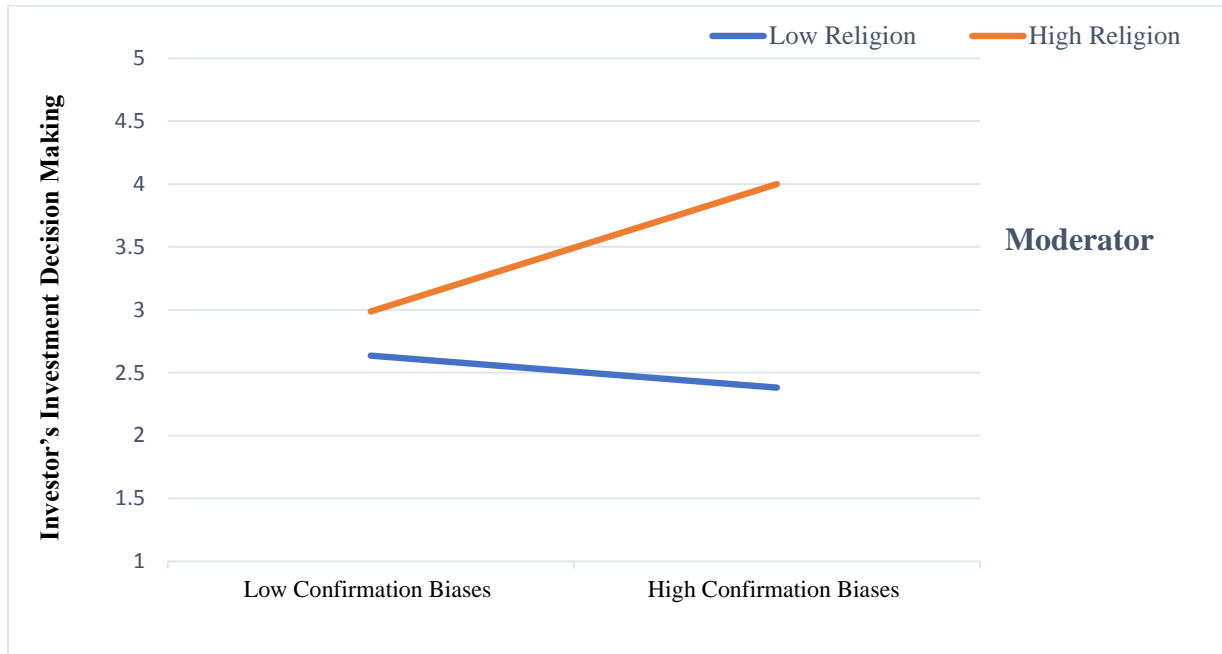


Figure 3: Moderation Effect Of Religiosity Between Overconfidence And Investor's Investment Decision Making

Source: Researcher's own estimations based on analysis results

It is also found that religiosity is a moderating variable between confirmation biases and investor's investment decision making with t-value 6.29 and $\beta = 0.480$. β -value shows that religiosity positively moderates the relationship between confirmation biases and investor's investment decision making. Figure 4 shows that religiosity strengthens the positive relationship of confirmation biases and investor's investment decision making. Hence, the religiosity has the ability to enhance investor's investment decision making through confirmation biases.

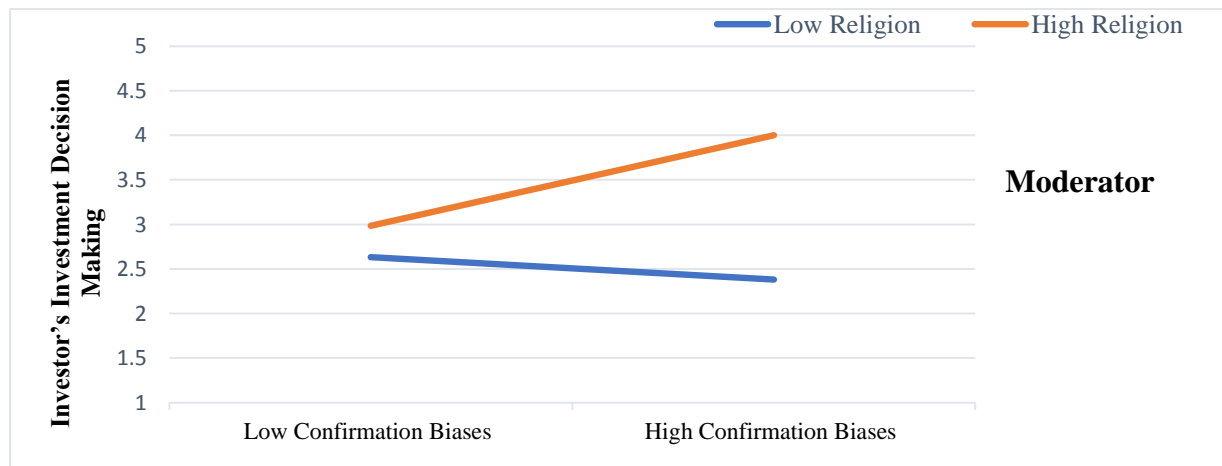


Figure 4: Moderation Effect of Religiosity between Confirmation Biases and Investor's Investment Decision Making

Source: Researcher's own estimations based on analysis results



6. Conclusion

This study investigated the role of psychological factors (overconfidence, confirmation bias) on investor's decision-making process. Moreover, the current study investigates the moderating role of religiosity between psychological factors and investor's decision-making process. The study focused on the individual investors and brokers of stock exchange in Pakistan.

It is revealed that psychological factors have important contribution towards investor's decision-making. More confirmation biases enhance the accuracy of investor's decision-making. It facilitates an investor to take better financial decision in right direction. However, overconfidence decreases the accuracy of investor's decision-making. Due to overconfidence, an investor may take wrong investment decision. Furthermore, religiosity is also one of the important factors which affect the accuracy of investor's decision-making. Religiosity increases the accuracy of investor's decision-making for Muslim investors in Pakistan.

Researchers are invited to explore various political factors which effect on investor's decision making. As the political factors are most influencing (Maqbool, Hameed, & Habib, 2018). Therefore, the current model should be examined by adding multiple political factors.

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