



Impact of demographic factors and behavioural biases on investment behaviour: An Empirical Study

Mohd. Shamim Ansari, Associate Professor

Department of Commerce, Aligarh Muslim University, Uttar Pradesh

Mohd. Adil, Research Scholar

Department of Commerce, Aligarh Muslim University, Uttar Pradesh

Abstract

Purpose: In this paper we have attempted to investigate impact of demographic variables (age, investment experience, and gender) and behaviour bias (overconfidence, and Risk-averse) on investment behaviour decision of individual in Aligarh District of Uttar Pradesh.

Research methodology: This study is empirical in nature and have used questionnaire to collect data. In this study we have considered 188 individual investors' response. The validity and reliability are essential in primary data collection researches. Pearson correlation and Cronbach's Alpha is used to check the validity and reliability. Multiple linear regressions are used to test the impact of demographic variables and behavioural bias on investment decision-making of investors.

Findings: The result suggests the age, investment experience, and gender have a significant impact on overconfidence. It also explains that age has a negative and significant impact on overconfidence but contrary to this, gender and investment experience has a positive and significant impact on overconfidence. The findings of the results state that age and investment experience have a positive and significant impact on risk-averse behaviour but gender shows a negative and significant impact on risk-averse behaviour. The results also reveal that overconfidence and risk-averse behaviour has a significant impact on investment decision-making. Furthermore, the results also stated that age and investment experience have positive and significant impact on investment decision-making of individual investors while, gender shows a negative and significant impact on investment decision-making of individual investors.

Novelty/Originality: This study endeavour to contribute to the existing literature. It examines whether the demographic and behaviour are relevant in behavioural finance (investment decision) or not. This study specifically focuses on the behavioural bias variables and attempted to analyses their impact on investment decision-making. Very few studies focus on impact of cognitive and demographic variables in India.

Research Implications/ Limitations: The results of this study will be helpful to portfolio managers and finance consultants. The understanding of these variables can help them in suggesting need based financial products to clients. The finding would help advisors in portfolio management in portfolio construction for clients according their investment needs which varied according to age, risk appetite, return expectations and individual cognitive personality.

JEL code: G02, G11



1. INTRODUCTION

The traditional economic theories view the individual investment choice between immediate consumption and postponed consumption. The investor gives priority to the benefit of acquiring today instead of the advantage that might be earned by investing the unused fund for enjoying bigger consumption in the future. The axiom of utility theory argues that the investors are 1) fully rational, (2) handle the complicated selection, (3) risk-averse and (4) capital maximizing (Von Neumann and Morgenstern, 1944). Traditional financial economics theories are based on assumption that human beings are rational (Mittal, 2019). Proponents of modern portfolio and efficient market hypothesis theory believe the all existing information is factored in while making any investment decision. The perception of the rational human being has dominated economics and finance theories for more than 50 years. Contradictory Behavioural finance theory started gaining momentum after many researches approved significant role of specific human behaviour in decision making. This view point is contrary to traditional finance theories. Behavioural finance is the study of psychology of individual investor and explains how cognitive bias affects the investment decision of the investors. It has been observed that human decisions usually depend on their perceptions, nature, and their cognitive or emotional bias behaviour (Kahneman, 2003). Thus, we can conclude that the concept of investors' behaviour different from the concept of imaginary rational investors.

Behavioural finance is a systematic way of studying financial markets without traditional patterns and complete rationality (Bodie and Marcus, 2005). The behavioural finance theories explore a couple of peculiarities in the traditional theories under real conditions and researchers have attempted to give clarifications to these peculiarities. Behavioural finance theories elaborate on the emotions and cognitive behaviour bias and how these behaviour biases dominantly affect investment decision-making (Mittal, 2019). Behaviour theory like Prospect theory assumes that gain and losses are both appreciated differently, and thus individual investors make choice with according to their perceived gains instead of perceived losses (Tversky and Kahneman, 1979). Modern portfolio theory hypothesized that humans are risk-averse which means that if two portfolios are proposed with the same return, they would choose the portfolio with lesser risk (Markowitz, 1952). Behaviour finance tries to better recognize and evaluate how emotions and Behaviour errors affect investors. Cognitive bias is the error in thinking that affects the investment decision and judgment that individually make. These biases are the limitation in rational thinking that is because of the tendency to observe information through a filter of personal experience, perception, and preferences. Behavioural finance is the study of the psychology of the individual investor and explains how cognitive bias affects the investment decision of the investor. Cognitive bias is the error in thinking that affects the investment decision and judgment that individually make. These biases are the limitation in rational thinking that is because of the tendency to observe information through a filter of personal experience, perception, and preferences. Behaviour bias is a systematic way of deviation while making a rational decision. It



is considered as the errors in decision making which can help us make quick decisions but can lead to poor judgment. Behaviour biases enhance our psychological effectiveness by empowering us to make quick decisions without any sensible planning. This biased Behaviour reduces the rationality in decision making. Behavioural biases affect the rationality of investors' investment decision making (Brabazon, 2000). It refers to the tendency which results in irrational financial decisions caused by faulty reasoning which is influenced by emotions and cognitive reasoning (Pompian, 2012). Two irrational investment behaviours variables considered in the study are (i) overconfidence and (ii) risk-averse. These variables are explained in the following paragraph: -

(i) Overconfidence:

It is the tendency of people to become extra convinced in performance abilities of any security. This is considered as a negative factor in investors' attitude towards any security. In this case, an individual behaves in such a way that whatever he/she does is correct. When an investor is confident in his judgment and tends to think superior to the real accuracy of that judgment. Overconfidence is referred to as an inclination of an individual to overrate their knowledge, understanding, cognitive skills and the accuracy of their information (Bhandari and Deaves, 2006).

(ii) Risk-Averse:

Risk-averse bias is the tendency when individual prefers lower gain with known risk rather than higher gain with unknown risk. In other word, among various projects giving the same return with different level of risk, the individual always prefers the alternative with least risk. According to Kahneman and Tversky (1979), "an individual tends to be risk averse in choices involving sure gains and to be risk seeking in choices involving sure losses".

In this paper we attempted to investigate the impact of demographic variables (i.e. Age, Gender, and Investment Experience) and Behaviour biases (i.e. Overconfidence and Risk-taking) on investment decisions. This paper is organised as: In section 1, the introduction of the study is provided. In section 2, Literature Review and research gap and contributions are surfaced. Research Methodology and research gap is described in Section 3. In Section 4 we have covered the results and discussion. Section 5 covers implication of the study for financial services companies. The paper is concluded in section 6 and suggested direction for further investigation.

2. REVIEW OF LITERATURE

The review has been segregated into three major areas related to the study i.e. prior studies on Overconfidence, prior studies on risk, prior studies on the demographic variable.

2.1 Investment decision, behavioural biases and demographic variables



Behavioural finance studies the behavioural and cognitive aspects of investment decision-making. It suggests that individuals display cognitive and affective behaviour bias which is regarded as irrational behaviour (Hamza and Arif, 2019). Various anomalies found by the researcher that deviate the investor's behaviour from rational to irrational. These anomalies are emotional, cognitive and behavioural biases. Tversky & Kahneman, (1974) were first who identified the psychological biases. Saugat Das & Ritika Jain (2014) revealed that demographic variables are significantly investment decision making of investors. This study explains the association between the demographic variables (i.e., gender, age, education and occupation) and investment objectives (i.e., retirement, risk, return, and tax) which influences the buying behaviour of the investors. Rehan & Umer, (2017) investigated the impact of behavioural bias on the investment decision of Pakistan Stock Exchange (PSE) with the help of multiple regressions where he concluded that representativeness, risk aversion, overconfidence, regret aversion and anchoring significantly affect investor decisions. However, on the other hand, two behaviour bias i.e. mental accounting and availability do not have a vital impact on investor decisions. Bhanusireesha & Sreelaxmi (2013) examine the "Impact of demographics on select investment avenues selected by investors in the twin cities of Hyderabad and Secunderabad, India". The results of the study concluded that gender, friends, and age are majorly influencing the investment decisions of the investors. Lin, (2011) and Gakhar, (2019) explain the individual investor inclined to certain behavioural biases and follow a rational decision-making process while selecting investment avenues. The result indicates that the majority investors invest in the less risky avenues. The study also suggests that gender doesn't affect the risk-taking Behaviour of investors. It has been observed that investment in the avenues having high risk differs age wise and also gender wise. Gender, risk-taking attitude and work experience and have a important impact on medium risk instruments. And low-risk investments do not affect by demographic factors. Hypothetical models by Gervais & Odean, (2001) and Odean, (1998) propose that investors generally have behavioural biases like self-attribution and overconfidence. Thus, because of overconfidence and lack of skill, investors usually make irrational investment decisions. Kahneman & Riepe, (1998) enlightened the significance of knowing about decisions regarding investment as these decisions are affected by finance and emotional circumstances over-time.

2.2 Demographic variables and Overconfidence:

Investors who are over confident overstate personal information and overlook the generally available information (Daniel, Hirshleifer and Subrahmanyam, 1998). Mushinada & Veluri, (2018) examine the overconfidence effect at Bombay Stock Exchange (BSE) investors. It explains that overconfident investors overrate to personal information and underrate to the widely available information. Female investors are comparatively less confident than their male counterpart. Male investors trade more aggressively than female investors (Barber and Odean, 2001). Statman et al., (2006) examine investors are overconfidence regarding valuation and trading skill and trading volume varies with past return. Moreover, Glaser & Weber, (2007) explain overconfidence impact on the cross-



correlation between trading volume and past returns. Mishra & Metilda, (2015) observed that overconfidence and self-attribution have significant correlation. The results conclude that as the investor's level of education and investment experience increases, the level of overconfidence is also increasing, and women are less confident than men. Devi & Joseph, (2017) scrutinize that according to the gender basis men have higher Behaviour in terms of rational, myth, overconfident and irrational as compared to women. But only rational Behaviour is statistically significant and the other three (myth, overconfident and rational) found insignificant. It was also found that rational Behaviour increases as the investment experience increase. Irrational and myth behaviour reduce as the experience increases. Investment experience has a significant impact on overconfidence. Moreover, overconfidence does not affect by age and education of investors (Zaidi and Tauni, 2012). Metawa et al., (2019) stated that demographic variable i.e. education level, age, and gender and behavioural factor i.e. overconfidence have positive and significant roles in investment decision-making. It also suggests that demographic variables significantly influence the behavioural factors and investment decision but vice versa is not true. It also stated that as the investment experience increases it overlooks the behavioural factors. Krishnamurthy, (2018) reported that behavioural factors have a vital role in decision-making related to equity investment. Overconfidence is at 12 ranks in the order of preferences given by the respondents which show the importance of overconfidence bias is least. Socio-economic characteristics like gender, age, qualification, education etc. are the major factor for the difference in investment.

2.3 Demographic variables and risk-aversion

Risk aversion impacts investment decision making under unwillingness (Shefrin and Statmam, 1985; Weber et al., 2002). Risk-averse indicate the scale at which a person intend to avoid risk taking (Sung and Hanna, 1996). The investment decision behaviour is affected by investor's perceived attitude towards risk (Riaz, Hunjra and Azam, 2012). Niessen & Ruenzi, (2007) observed that there is a difference in gender professional setting. Though both male and female have same educational background and work experience; female managers are more risk-averse, follow consistent investment patterns. However, male managers trade more as compare to female managers. Single women are less risk tolerance as compare to single men (Sung and Hanna, 1996). Sadiq & Ishaq, (2014) observe that gender has insignificant impact on the risk tolerance Risk-tolerance has an inverse relationship with age while having a direct relationship with investor's education, income, investment experience, and investment knowledge, risk tolerance ability. Fisher & Yao, (2017) divided risk tolerance into two categories i.e. high-risk tolerance and low risk tolerance. The result shows that male have more risk tolerance ability compared to female. It further observed that this is not due to gender itself but because of other factors such as Income, Net worth etc. Women are more concerned toward that risk which is related to their family and less toward their working life compare to men and the meaning they attribute to risk is also different. Kumari & Sar, (2017) evaluate the impact of overconfidence, risk-tolerance bias, herding on investment



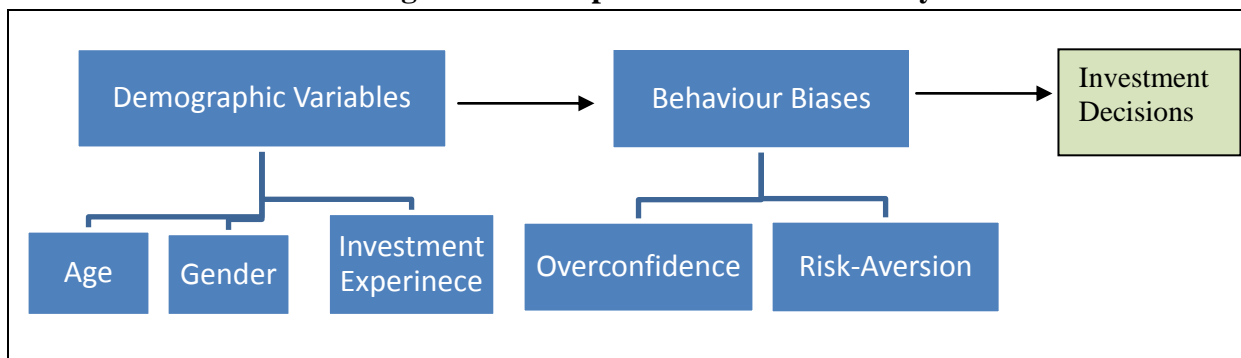
performance. The results show that out of three factors of overconfidence (i.e. dispositional optimism, unrealistic optimism, and situational optimism) only situational optimism does not affect the investment performance and the rest of the two affect the investment performance. As risk-tolerance also consist of three factors (calculative risk, speculative risk, and impulsive risk). In these three, impulsive risk is not a significant dimension that affects the performance of investment and the other two, speculative risk and calculative risk found out as a vital dimension that impacts investment performance. Researcher reveals that the Investment Behaviour of young professionals is dependent on age and income but independent of gender and Investor age and income affects the decision-making process (Ansari and Moid, 2013).(Kumari and Malekar, 2012) examine that the majority of men are indulged in investment than females. And female investors invest in gold. The result shows that as individuals age increases their capacity to tolerate the risk decreases. Powell & Ansic, (1997) depict that men are comparatively more risk-taker than women consisting specialist populations (i.e. managers, entrepreneurs and manager) and general population.

3. RESEARCH METHODOLOGY and RESEARCH GAP

3.1 Research Objectives

After an extensive review, it is understood that the researchers all over the world have inspected regarding the association between the demographic variables and investment decision or behaviour biases and investment decisions. However, to the best of our knowledge no study intends to establish the association between demographic variable and behaviour bias. Based on the previously reviewed literature, the authors established a conceptual model shown in Figure 1.

Figure 1: Conceptual Model under Study



The proposed models explain (i) the association between demographic variable and Behaviour biases, (ii) the association between behaviour biases and investment decision and (iii) the association between demographic variable and investment decision.



The primary objective of this paper is studying the following: -

- To analyze the impact of the demographic variable on behavior bias.
- To analyze the influence of Overconfidence and Risk-Aversion bias on the investment decision-making of investors.
- To analyze the impact of the demographic variable on investment decision.

3.2 Hypotheses of the study

In this study we assumed following three hypotheses.

H₀₁: There is no associate between demographic variables and behaviour bias.

H_{01a}: There is no significant impact of demographic variables on Overconfidence.

H_{01b}: There is no significant impact of demographic variables on Risk-Aversion.

H₀₂: There is no association between behaviour biases and investment decision.

H_{02a}: There is no significant impact of overconfidence on investment decision-making.

H_{02b}: There is no significant impact of risk-aversion on investment decision-making

H₀₃: There is no association between demographic variable and investment decision.

4. RESEARCH METHOD

We have used Cronbach alpha and Pearson's correlation test to check the reliability and validity of the instrument. Multi-linear regression is used to test the above hypothesis.

4.1 Variable and items in categories

We have considered three demographic variables (age, gender and investment experience) as the independent variables and two behaviour variables (overconfidence and risk-taking ability) as the dependent variable for the first objective of the study. To examine the impact of overconfidence and risk-taking behaviour biases on investment decision of investors. The aim of the paper is to understand the relationship between investor characteristics and their investment patterns. For the study of second objective we assumed behaviour bias (overconfidence and risk-taking ability) as the independent variable and investment decision as a dependent variable.

To examine overconfidence, we asked the respondent to estimate the accuracy their ability to perform in the stock market. We have also adjusted these questions to make it appropriate for the Indian capital market. These items examine the investors' perception of the precision of their knowledge, the capability of selecting better performing stocks compared to their peer group, taking full control and responsibility of their portfolio performance and their efficacy of transaction.

To understand the risk-aversion behaviour of investors we ask the respondent about (i) their ability to



take the risk for a better return, (ii) holding fixed-income security and (iii) comfort level in investing in new avenues.

To examine investment decision-making ability the respondents were asked questions regarding the previous trading decisions which include the (i) volume of the stock (ii) trading frequencies and (iii) return on the investment.

4.2 Regression Models

The regression investigation encompasses the three models. The first two models (Model 1 and Model 2) examine the association among the three demographic variables (Age, Gender, and Investment Experience) of two variables of behavioural biases (Overconfidence and Risk-aversion). These two models are used to examine Hypotheses H_{01a} and H_{01b} respectively.

$$\text{Model 1: } OVC_i = \beta_0 + \beta_1 A_i + \beta_2 G_i + \beta_3 IE_i + \varepsilon$$

$$\text{Model 2: } RT_i = \beta_0 + \beta_1 A_i + \beta_2 G_i + \beta_3 IE_i + \varepsilon$$

Where, for $i = n$ observation, OVC_i = Overconfidence (Dependent variable), RA_i = Risk-Aversion (Dependent variable), $\beta_1 A_i$ = Age (Independent variable), $\beta_2 G_i$ = Gender (Independent variable), $\beta_3 IE_i$ = Investment experience (Independent variable), β_0 = y-intercept (constant term), ε = the model's error term

In models 3, we have explained the association among two variables of behavioural biases (Overconfidence and Risk-Aversion) and investment decision as a predictor of Investment Decision-making. This model used to examine Hypothesis H_{02} .

$$\text{Model 3: } ID_i = \beta_0 + \beta_1 OVC_i + \beta_2 RA_i + \varepsilon$$

Where, ID_i = Investment Decision-making (Dependent variable), $\beta_1 OC_i$ = Overconfidence (Independent variable), $\beta_2 RA_i$ = Risk-Aversion (Independent variable), β_0 = y-intercept (constant term), ε = the model's error term.

In the last model 4 we examine the impact of three demographic variables (Age, Gender, and Investment Experience) on investment decision.

$$\text{Model 4: } ID_i = \beta_0 + \beta_1 A_i + \beta_2 G_i + \beta_3 IE_i + \varepsilon$$

Where, ID_i = Investment Decision-making (Dependent variable), $\beta_1 A_i$ = Age (Independent variable), $\beta_2 G_i$ = Gender (Independent variable), $\beta_3 IE_i$ = Investment experience (Independent variable), β_0 = y-intercept (constant term), ε = the model's error term



4.3 Data source

This study is descriptive and applied research. The research is based on primary data where we used questionnaire to collect relevant data. The item in questionnaire is related to investment decision-making, overconfidence, and risk-taking. These questions help to scrutinize the psychology of investors and their investment decision-making ability. The validity of the questionnaire is checked by experts. The probability sampling is used to accomplish this study. 250 people we approached for the survey. The questionnaire was sent online as well as on a one-to-one basis. We received response from 203 only. However, we considered only 188 questionnaires for the study as 15 responses were incomplete or not properly filled up. These respondents who participated in study are from diverse background such as corporate managers, government officers, housewives, students, research scholars, teachers, salaried employees, and doctors. We have tendered the questionnaires to person falling in age category of 18 years and above as this are limit age fixed to determine the status of major in India.

Table1:

Variables		Number of investors	%age
Gender	Male	95	50.53
	Female	93	49.46
	Total	188	100
Age	18-24	5	2.65
	25-34	104	55.33
	35-44	50	26.59
	45 & above	29	15.42
	Total	188	100
Investment Experience	0-1	87	46.27
	1-3	37	19.68
	3-5	38	20.21
	5 & above	26	13.82
	Total	188	100

5. RESULTS AND DISCUSSION

5.1 Reliability and Validity

The validity and reliability are essential in primary data collection researches. The degree to which the tool examines what it supposed to examine is known as the validity of a measured instrument. It is based on the power of gathering different kinds of evidence. The Pearson correlation is considered to test the validity and measure the degree of linear association between the variables. By linear association, it means that the association can be well-characterized by the straight line. Correlation is a bivariate analysis tool and it measures the degree association and direction between two variables.



Table: 2

Variable	Overconfidence	Risk-Taking	Investment decision-making
Overconfidence	1	.780	.605
Risk-Aversion		1	.653
Investment Decision-making			1

Compiled by authors

Table 2 shows that the highest correlation ($r = .780$) was between the variable's Overconfidence ($M = 2.53$, $SD = .858$) and Risk-Aversion ($M = 2.27$, $SD = .799$). In addition, the least correlation ($r = .605$) was between Investment decision-making and Overconfidence. As the correlations absolute values are considerably lower than .80, there is no issue of multicollinearity (Hair *et al.*, 1998).

Reliability is how well a test measure what it should and we used Cronbach's alpha test it. It helps in determining the reliability, or internal consistency. Cronbach's alpha helps in examine whether the designed test is exactly measuring the interest or reliability of variables.

Table:3

Variable	Cronbach's Alpha	Mean (M)	Standard deviation (SD)
Overconfidence	.860	15.18	5.15
Risk-Aversion	.776	11.99	3.99
Investment decision-making	.775	17.76	4.21

Compiled by authors

Table 3 also suggests that the Cronbach's alpha of Overconfidence is the highest ($\alpha = .860$, $M = 15.18$, $SD = 5.15$) followed by Risk-Taking ($\alpha = .776$, $M = 11.99$, $SD = 3.99$) and Investment decision-making is ($\alpha = .775$, $M = 17.76$, $SD = 4.21$). We can assume that constructs satisfy the requirements of internal consistency (Hair *et al.*, 1998).

4.2 Multiple Linear Regressions (MLR)

Multiple linear regressions are used in the study which uses several independent variables to forecast the result of a dependent variable. The MLR attempts to model which shows the association between two or more independent variables and dependent variables by fitting a linear equation to the observed data. It is an extension of linear regression that encompasses more than one predictor or independent variable.



Table: 4

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.769	.243		11.385	.000
Age	-.581	.070	-.530	-8.301	.000
Gender	.617	.107	.360	5.772	.000
Investment experience	.159	.050	.206	3.152	.002

R- Square = .331; Adjusted R- Square =.320

Notes: H01a: There is no significant effect of demographic variables on the overconfidence behaviour of investors.

$$OVC_i = \beta_0 + \beta_1 A_i + \beta_2 G_i + \beta_3 IE_i + \varepsilon$$

Level of Significant = 5%

Source: Compiled by the authors

Hypothesis H₀₁: We assumed that there is no between demographic variables and behaviour bias. To test this, we used linear regression analysis with all the demographic variables showing the impact on overconfidence. We divided this hypothesis into two sub-hypotheses i.e. H_{01a} and H_{01b} (Table 4). Gender, investment experience and age have been found significant in influencing overconfidence behaviour.

Sub-Hypothesis H_{01a}: In this hypothesis we proposed that there is no significant impact of demographic variables on Overconfidence. It is observed that there is significant impact of gender, age and investment experience on overconfidence of investors. The marginal effect for gender is positive and significant (p<.05) impact on overconfidence with according to the result of linear regression not approving the hypothesis. The Beta value for gender is .360. The coefficient results stated that gender affects overconfidence behaviour among investors. (Devi & Joseph, 2017; Metawa et al., 2019; Mishra & Metilda, 2015). The marginal effect of Age is negative and significant (p<.05). The Beta value for age is -0.530. The coefficient result explains that is, a year increases in age it leads to reduce overconfidence by -0.530 (Mishra and Metilda, 2015). The marginal effect of investment experience is significant (p<.05) and positively affect overconfidence Behaviour. The Beta value is .206. The coefficient result explains that when investment experience increases, overconfidence increase by .206. The regression results not support the hypothesis (Table 4). The previous study also confirmed the same results in Deaves et al., (2010).



Table: 5

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.413	.212		16.063	.000
Age	.546	.061	.534	8.930	.000
Gender	-.336	.093	-.211	-3.605	.000
Investment Experience	.120	.044	.167	2.726	.007

R- Square = .412; Adjusted R- Square=.403

Note: H01b: There is no significant effect of demographic variables on the risk-averse behaviour of investors.

RA_i= β₀ + β₁A_i + β₂G_i + β₃IE_i + ε

Level of Significant = 5%

Source: Compiled by the authors

Sub-Hypothesis H_{01b}: In order to test this hypothesis, we used multiple linear regression analysis to test. Here we proposed that gender, age, and investment experience have no significant effect on risk-aversion. The marginal effect for gender is negative and significant (p<.05) impact on risk-aversion. The Beta value for gender is -.211, it indicates that gender significantly affects the risk-aversion behaviour among the investors. The previous study has also confirmed the same result (Fisher & Yao, 2017; Powell & Ansic, 1997).The marginal effect of age is positive and significant (p<.05). The Beta value for age is .534. The coefficient result explains that when age increases, risk-averse bias also increases by .534. The previous study has also confirmed the same result i.e. Jianakoplos & Bernasek, (2006) and Sadiq & Ishaq, (2014).The marginal effect for investment experience is positive and significant (p<.05) impact on risk-averse bias. The Beta value for investment experience is .167. The coefficient result explains that when investment experience increases, risk-averse behaviour also increases by .167. The results show a positive relation between investment experience and risk-averse behaviour. This could be possible because of age, as investment experience increases, age also increases and as age increases risk-averse behaviour increases with according to the result of multiple regressions not approving the hypothesis (Table 5).

Table: 6

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.003	.124		8.096	.000
Overconfidence	.199	.071	.243	2.786	.006
Risk-averse	-.408	.077	-.464	-5.326	.000

R- Square = .450; Adjusted R- Square=.443

Note: H01b: There is no significant effect of behaviour biases on investment decision.

IDM_i= β₀ + β₁OVC_i + β₂RA_i + ε

Level of Significant = 5%

Source: Compiled by the authors



Hypothesis H₀₂: We assumed that there is no association between behaviour biases and investment decision. To test this, we used multiple linear regressions. We divided this hypothesis into two sub-hypothesis i.e H_{02a} and H_{02b}.

Sub-hypothesis H_{02a}: In this sub-hypothesis we proposed that there is no significant impact of overconfidence on investment decision-making. The marginal effect for overconfidence is significant (p<.05) and positively affect the investment decision-making according to the result of multiple regression not approving the hypothesis. The beta value for overconfidence is .243. The coefficient result indicates that if the investors were overconfidence, they are .243-times more likely to make a rational investment decision. This finding is also similar to previous research examining the impact of overconfidence on investment decision-making (Metawa *et al.*, 2019); Rehan & Umer, 2017; Lin, 2011) (Table 6)

Sub-hypothesis H_{02b}: In this sub-hypothesis we proposed that there is no significant impact of risk-aversion on investment decision-making. The marginal effect for the variable is significant (p<.05) and the negative impact on investment decision-making according to the result of multiple regression not approving the hypothesis. The Beta value for risk-taking is -.464. The coefficient result indicates that when an investor's risk-averse behaviour decreases, .464-times more likely to make a rational investment decision (Table 6).

Table: 7

Variables		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.446	.232		10.541	.000
	Age	.293	.102	.209	2.873	.005
	Gender	-.117	.067	-.130	-1.754	.035
	Investment Experience	.074	.048	-.117	-1.544	.004

R- Square = .302; Adjusted R- Square=.307
Note: **H_{01b}: There is no significant effect of demographic variables on the investment decision of investors.**
RA_i = β₀ + β₁A_i + β₂G_i + β₃IE_i + ε
Level of Significant = 5%
Source: Compiled by the authors

Hypothesis H₀₃: We assumed that there is no association between demographic variable and investment decision. We used multiple linear regression analysis with all the demographic variables showing the impact on investment decision. Age and investment experience have been found significant in influencing investment decision (Table 7).

In hypothesis H₀₃ we anticipated that gender, age, and investment experience have no significant effect on investment decision-making. The marginal effect for gender is negative and significant



($p > .05$) impact on investment decision. The Beta value for gender is $-.117$. The coefficient results stated that gender show a significant impact on investment decision among investors. The marginal effect of Age is positive and significant ($p < .05$). The Beta value for age is 0.293 . The coefficient result explains that as age increases rationality in investment decision is also increases by 0.293 . The marginal effect of investment experience is significant ($p < .05$) and positively affect investment decision. The Beta value is $.074$. The coefficient result explains that when investment experience increases, investment decision increase by $.206$. It is concluded that as the investment experience increases rationality in investment decision is also increases. The regression results not support the hypothesis.

6. IMPLICATIONS OF THE STUDY

This research throws light on the two major behavioural dimensions that affect investment performance. These aspects should be taken into account while designing the investment portfolio by financial experts and fund managers for their customers. As it has been difficult to understand the personality of investors, one should be mindful of the pros and cons associated with these variables while taking investment decisions.

The results of this research might be extremely helpful for portfolio managers, investment agencies, and investment advisors. They can plan and suggest appropriate investment avenue for their customers. Understanding demographic profile and behavioural aspects like overconfidence and risk-averse is the key in investment planning. Further risk-return measurement should also be taken into consideration at the time of portfolio planning. The models described in the study could be helpful in effective investment planning based of investment need of client which is very much dependent upon cognitive behaviour, age profile and risk aptitude. Overconfidence is found significant and positively associated with investment decision-making. The financial advisor can provide them high-risk high-return investment programs. They should attempt to plot demographic variables and behavioural factors of their clients to frame need based investment portfolio. Practically, under the scenario of uncertainty, it becomes necessary to design the portfolio as per the requirement of the investors. Hence, this research enhances the importance of these variables and how one should be aware of them in their investment approaches.

7. LIMITATIONS

The study considered two behaviour biases and Aligarh district as a sample region. Future research can be conducted by considering other Behavioural biases variable in other parts of the country.

8. CONCLUSION



The study suggests that gender has an affirmative and important impact on the overconfidence of investors. Further the study also points out that age is negatively related to overconfidence. This means with the increase age overconfidence among the investors decreases. It may noted that overconfidence is never a good any decision. Thus, we can conclude that with increase in age investors tends to behave much more rationally.

The study also revealed that investment experience is positively related to overconfidence among investors which means that with the increase in investment experience, overconfidence among investors also increases. The finding of the study also supports other study by Deaves et al., 2010 and Glaser & Weber, 2007.

The study suggests that age has a positive and significant impact on the risk-averse attitude among investors (Wang and Hanna, 1997). Thus, we can conclude that with the increase in age risk aversion attitude among investors also increase. Risk aversion attitude among old age investors are more prevalent than young investors. This result also support results of other study by Grable and Lytton, 1999.

One of the results of this study also revealed that gender has a negative and significant effect on the risk-averse attitude among investors. This is also similar to earlier study by Graham et al., 2002. The result further indicates that investment experience has a negative and significant impact on risk-taking aptitude among investors.

Further it is also observed that overconfidence has a significant and positive impact the investment decision-making ability of investors(Barber and Odean, 2001). It can be concluded that as the overconfidence increases among the investor, rationality in investment decision also increases. The result also suggests that risk-taking has a negative and significant effect on investment decision-making. So, it can be concluded that as the risk-averse attitude increase, rationality in investment decision making decreases. The result indicates that a negative correlation exists between risk-aversion attitude and investment decisions. An increase in risk-aversion attitude caused a negative effect on investor's ability of investing decision. It has been observed that age and investment experience have positive and significant impact on investment decision, while gender shows a negative and significant impact on investment decision. It can be concluded as age and investment experience increase, rationality in investment decision-making also increases.



REFERENCES

- Barber, B. M., & Odean, T. (2001, February). Boys Will Be Boys: Gender, Overconfidence, And Common Stock Investment*. *Quarterly Journal Of Economics*, 261-292.
- Bhandari, G., and R. Deaves, 2006, Demographic of Overconfidence, *The Journal of Behavioural Finance*, Vol. 7, No. 1: 5–11
- Bodie Z., Kane A. and Markus A, (2005). Investments; Sixth Edition; McGraw-Hill
- Brahmabhatt, Kumari, P. R., & Malekar, S. (2012, September). A Study Of Investor Behaviour On Investment Avenues In Mumbai Fenil. *TRANS Asian Journal of Marketing & Management Research*, Vol.1(Issue 1), 49-71.
- Daniel Kahneman; Amos Tversky (1979), Prospect Theory: An Analysis of Decision under Risk, *The Econometric Society*, Vol. 47, No. 2. pp. 263-292.
- Devi, N. N., & Joseph , A. V. (2017, October). Impact of demographic factors on Mutual fund Individual Investors’ investment Behaviour. *International Journal for Research in Engineering Application & Management (IJREAM)*, 36-45. doi: 10.18231/2454-9150.2017.0021
- Fisher, P. J., & Yao, R. (2017). Gender Differences in Financial Risk-tolerance. *Journal of Economic Psychology*, 191–202.
- Gakhar, D. (2019) Role of Optimism Bias and Risk Attitude on Investment Behaviour. *Theoretical Economics Letters*, 9, 852-871.
- Gervais, S., & Odean, T. (2001). Learning to be overconfident. *The Review of Financial Studies*, 14(1), 1-27.
- Glaser, M. and Weber, M. (2007), “Overconfidence and trading volume”, *Geneva Risk and Insurance Review*, Vol. 32 No. 1, pp. 1-36.
- Glaser, Markus and Weber, Martin, Overconfidence and Trading Volume (April 14, 2003). AFA 2004 San Diego Meetings. Available at SSRN: <https://ssrn.com/abstract=626761> or <http://dx.doi.org/10.2139/ssrn.626761>
- Grable, J. E. and Lytton, R. H. (1999b). ‘Assessing Financial Risk Tolerance: Do Demographic, Socioeconomic, And Attitudinal Factors Work?’ *Family Relations and Human Development /Family Economics and Resource Management Biennial*, pp. 1-9.
- Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (1998). *Multivariate Data Analysis*. Upper Saddle River, NJ: Prentice hall.
- Jianakoplos, N., & Bernasek, A. (2006). Financial Risk Taking by Age and Birth Cohort. *Southern Economic Journal*, vol. 72(issue 4), 981–1001.
- K.C.Mishra, Mary J. Metilda, (2015), A study on the impact of investment experience, gender, and level of education on overconfidence and self-attribution bias, *IIMB Management Review*, 27, Pp. 228-239.
- Kahneman, D. and Riepe, M.W. (1998), “Aspects of investor psychology”, *Journal of Portfolio Management*, Vol. 24 No. 4, pp. 52-65.
- Kahneman, Daniel. 2003."Maps of Bounded Rationality: Psychology for Behavioural Economics."*American Economic Review*, 93 (5): 1449-1475.DOI: 10.1257/000282803322655392



- Krishnamurthy, M. A. (2018, July). The Impact of Behavioural Factors on Equity Investment Decisions: An Empirical Study. *International Journal of Management Studies*, Vol.-V(3(7)), 71-77. doi:10.18843/ijms/v5i3(7)/0
- Kumari, N., & Sar, A. K. (2017, August). Cognitive And Behavioural Biases Influencing Investment Peerformance. *International Journal of Multidisciplinary Research*, Vol.7 (8), 49-62.
- Lin, H.W. (2011), "Elucidating rational investment decisions and Behavioural biases: evidence from the Taiwanese stock market", *African Journal of Business Management*, Vol. 5 No. 5, pp. 1630-1641.
- M, A. N., Balasubramanian, & Yermal, L. (2017, February 1). Factors Influencing Herding Behaviour Among Indian Stock Investors., (pp. 226-229). doi:10.1109/ICDMAI.2017.8073535
- Mishra, K.C. and Metilda, M.J. (2015), "A study on the impact of investment experience, gender, and level of education on overconfidence and self-attribution bias", *IIMB Management Review*, Vol. 27 No. 4, pp. 228-239.
- Mittal, S. K. (2019, June 27). Behaviour biases and investment decision: theoretical and research framework. *Qualitative Research in Financial Market*. doi: 10.1108/QRFM-09-2017-0085
- Mushinada, V.N.C. and Veluri, V.S.S. (2018a), "Investors overconfidence Behaviour at Bombay Stock Exchange", *International Journal of Managerial Finance*, Vol. 14 No. 5, pp. 613-632.
- Niessen, A., & Ruenzi, S. (2007). Sex Matters: Gender Differences in a Professional Setting. *SSRN Electronic Journal*. doi:10.2139/ssrn.966243JO
- NouraMetawa, M. Kabir Hassan, Saad Metawa, M. Faisal Safa, (2019) "Impact of Behavioural factors on investors' financial decisions: case of the Egyptian stock market", *International Journal of Islamic and Middle Eastern Finance and Management*, Vol. 12 Issue: 1, pp.30-55, <https://doi.org/10.1108/>.
- Pompian, M. (2012). *Behavioural Finance and Investor Types: Managing Behaviour to Make Better Investment Decisions*. New York: John Wiley & Sons.
- Pompian, M.M.and Wood, A.S. (2006), *Behavioural Finance and Wealth Management: How to Build Optimal Portfolios for Private Clients*, John Wiley & Sons, Hoboken, NJ.
- Powell, M. and Ansic, D. (1997), "Gender differences in risk Behaviour in financial decision-making: an experimental analysis", *Journal of Economic Psychology*, Vol. 18 No. 6, pp. 605-28.
- R. Deaves, E. Luders, M. Schroder, The dynamics of overconfidence: evidence from stock market forecasters, *Journal of Economic Behaviour and Organization*, 75 (3) (2010), pp. 402-412
- Rehan, R., & Umer, I. (2017, December). Behavioural Biases and Investor Decision. *Market Forces College of Management Sciences*, Vol. XII, 12-20.
- Riaz, L., Hunjra, A. I., & Azam, R.-i. (2012, January). Impact of Psychological Factors on Investment Decision Making Mediating by Risk Perception: A Conceptual Study. *Middle East Journal of Scientific Research*, 789-795. doi: 10.5829/idosi.mejsr.2012.12.6.1777.
- Sadiq, M. N., & Ishaq, H. M. (2014). The Effect of Demographic Factors on the Behaviour of Investors during the Choice of Investment: Evidence from Twin Cities of Pakistan. *Global Journal of Management and Business Research: C Finance*, Volume 14 (Issue 3 Version 1.0)
- Slovic, P., From Shakespeare to Simon: Speculations-and Some Evidence-about Man's Ability to Process Information, *ORI Research Monograph*12 (1972), 2, Oregon Research Institute



- Statman, M., Thorley, S. and Vorkink, K. (2006), “Investor overconfidence and trading volume”, *Review of Financial Studies*, Vol. 19 No. 4, pp. 1531-1565.
- Von Neumann, J. and Morgenstern, O. (1944), *Theory of Games and Economic Behaviour*, Princeton University Press, Princeton, NJ
- Wang, H. And S. Hanna, 1997. Does Risk Tolerance Decrease with Age? *Financial Counseling and Planning* 8(2), pp. 27–32.
- Zaidi, F.B. and Tauni, M.Z. (2012), “Influence of investor’s personality traits and demographics on overconfidence bias”, *Institute of Interdisciplinary Business Research*, Vol. 4 No. 6, pp. 730-746.