CHAPTER NO. 1

INTRODUCTION

Finance is the allocation and utilization of money. In simple words finance is the process of how to generate money, how to manage money and where to invest money by utilizing financial insinuations and financial instruments in effective and efficient way. Main areas of finance are personal finance (individuals), corporate finance (companies) and public finance (National insinuations). In Finance fiction many great theories explaining market trends and behavior of individuals in their investments. Like efficient Market hypothesis theory (Fama 1970), capital asset pricing model CAPM (Jenson, Scholes And Black 1972) and modern portfolio theory (Markowitz 1952). In early 1990s a new arena of finance arise as behavioral finance in many academic research journals and business publications, Some writers linked behavioral finance (B.F) from 1800s. Disreputable of B.F is the amalgamation of sociology of science and finance (Ricciardi & Simon 2000). Behavioral finance supports us to recognize how our investments affected by our behaviors (emotional process and reasoning patterns). Behavioral finance supports us to recognize how our financial decisions are effected by our emotions and behaviors.

According to Kahneman and tversky (1979) every individual investor wants to maximize their investment returns and options in investment by differentiate their investment portfolios and level of risk. But human behaviors does not depends on conventional theories and effect their investment decisions directly and in indirectly. Camerer (1997) explains there are many behavioral factors that's lemmatized the thinking of investors and restrain them from behaving rationally in financial decision making. A rational decision is bases on the logical reasons, observations, and facts. To take a rational decision investor will perform a series of steps but psychological biases control him to take a rational decision and irrational decision generate based on emotions and feelings, that's effect investors portfolio performance (Camerer 1997).

A fruitful investment requires a complete knowledge of financial markets, financial trends in economy and the most important psychological biases (Jureviciene & Jermakova 2012).

1.1 Psychological Biases

In this study we examine how investment performance of individual investors is effected by psychological biases with mediating role of financial risk tolerance. Psychological biases also known as cognitive biases are systematic errors in patterns of judgments and deviation from norms. A bias is basically a misjudgment or mistake in evaluating, remembering and reasoning. These systematic errors affects us directly or indirectly in our daily communication and decisions. Cognitive biases also effect investors of financial markets also distress their financial assessments and their assets performance. Scholars discriminate a long list of biases more than 50 in current studies but the list of these biases appears very long. There are many types of psychological biases (Baker & Nofsinger 2002).

Overconfidence Bias

Representativeness Bias

Framing Bias

Anchoring and Adjustment Bias

Confirmation Bias Hindsight Bias

Self-Control Bias

Endowment Bias

Status Quo Bias

Cognitive Dissonance Bias

Availability Bias

Self-Attribution Bias

Illusion of Control Bias

Conservatism Bias

Ambiguity Aversion Bias

Optimism Bias

Mental Accounting Bias

Loss Aversion Bias

Regency Bias

Regret Aversion Bias

But in this research we are using only six biases anchoring bias, optimistic bias, regret aversion bias, herding bias, overconfident bias and representativeness bias.

1.1.1 Overconfidence Bias

The overconfidence bias effect is a nicely-mounted bias wherein a person's subjective self-beliefs in his or her judgments is reliably more than the goal accuracy of these judgments, mainly when confidence is fairly high (Zaiane & Abaoub 2010).

1.1.2 Optimistic Bias

Optimistic bias is the type of bias is which person/investor always believe that he/she is at lesser level of risk and experiencing a bad event then others. For example we may miscalculate the our risk of getting a heart attack, getting cancer and being a car accident relative to others.in business world we believe that our stock is in low level of risk than others. “Optimism bias (additionally known as unrealistic or comparative optimism) is a cognitive bias that causes a person to believe that they're at a lesser chance of experiencing a poor occasion in comparison to others”. people displaying remorse aversion keep away from taking decisive moves because they worry that, in hindsight, something path they choose will prove much less than choicest. Basically, this bias seeks to prevent the pain of remorse associated with poor decision-making (Kubilay & Bayrakdaroglu 2016).

1.1.3 Regret Aversion Bias

Regret aversion bias spatial version in attitudes plays an essential role in selections on geographical marketing efforts, together with targeting of junk mail campaigns and scheduling of income representatives. Similarly, for economic carrier businesses, it's far vital to time table their

economic planners across servable geographical regions primarily based on the spatial heterogeneity in customer choices and attitudes in the direction of economic merchandise. However, analyzing those attitudes is hard caused by the fact they're latent in nature, often spatially correlated, and records is probably sparse for some regions (Marcatto & Ferrante 2008).

1.1.4 Herding Bias

Herd effect bias behavior represents the tendency for a character to mimic the moves of a bigger organization, whether those movements are rational or irrational. In lots of cases, herd conduct is a hard and fast of decisions and actions that an individual might no longer necessarily make on his or her very own (Le Luong & Thi Thu Ha, 2011).

1.1.5 Anchoring bias

Anchoring bias is the type of cognitive bias for a person to depend too closely on a preliminary piece of data presented (referred to as the "anchor") while making decisions. In the course of decision making, anchoring occurs when people use this initial piece of records to make subsequent judgments (Le Luong & Thi Thu Ha, 2011).

1.1.6 Representativeness Bias

Representativeness bias is the type of cognitive or psychological bias which is used whilst making judgments approximately the opportunity of an event below uncertainty. Its miles considered one of a group of heuristics (simple guidelines governing judgment or decision-making) proposed via psychologists (Kahneman, 1972). The provision heuristic is an intellectual shortcut that is based on instantaneous examples that come to a given man or woman's thoughts while evaluating a selected subject matter, concept, approach or decision Representativeness (Le Luong & Thi Thu Ha, 2011).

To understand the process how psychological biases first we need to understand the investor investment decision process. investor investment decision process consist of two major portions first one is the psychology of investor and second one is its investment at micro or macro level.in practical world investors make verdicts and decisions constructed on personal beliefs, past events, and likings. All these terms develop a misleading shortcut for investor to take a decision but clue them away from long-term benefits.

1.2 Individual Investors

Stock investor are individuals or groups who utilize their money to buy equity securities. Main purpose of these peoples or groups is to get returns on their investments. Stock investors get returns in two form first one is the capital gain and second one is the dividend gain.

Capital gain is the type of gain in which investor when equity is sold at higher price than the buying price. For example investor buy 20 shares of ABC Company at 10 rupee each and sold these at 12 rupee per share and have 2 rupee capital gain at each share.

Divided gain is the type of gain in which investor get gain in the form of dividends from the company which equity investor own. Dividend is the amount of money paid to equity holders by company from the profits. Following are the types of investors.

1.2.1 Active Investors

Active investors are those investors who do a lot of research and study the financial markets and daily update their knowledge about financial news. These investors perform deep studies and analysis and then buy or sell the equities according to situations and trends. These investors do not hold equity for long term as well as not but one day and sell the next day (Barnewall 1987).

1.2.2 Passive Investors

Passive investors are not hungry for higher profits all the time. They accepts returns for a lower level stress and perform transactions in free time. Passive investors not perform in depth market analysis and make tractions on news they heard from their friends and families or they hire someone to make transactions on behalf of them like mutual funds mangers. Passive investors hold stock for longer period and to remove their investment stress they make a portfolio consist of higher, lower and risk free securities (Barnewall 1987).

1.2.3 Speculators

Speculators are those investors whom are hungry for returns and always looking a chance to make money faster. These investor investment depends on the news of financial markets that will affect the prices of equities in the future. For example a company is to merge with other company and

after that's stock rates of this company will effect speculators will react to this news and buy or sell the equities and generate profits earlier than other investors and repeat the same process frequently.

1.2.4 Retirement Investors

Retirement investors like to investment in those securities which have low level of risk and potential growth is the future as well as generate monthly income in the form of dividends. Retirement investor mostly invest in mutual funds because of diversified portfolio of securities

1.3 Financial Risk Tolerance

Financial risk tolerance is basically the level of risk taken by an investors on their investment or in simple words financial risk tolerance is how much investor is willing to take their investments. For example if an investor have a low level of financial risk tolerance he will sell the sock on the first news about his stock value going down.

1.4 Problem Statement

The investors of financial markets are taking decision according to their psychological traits in which some investors found risk averse and some are not (Kubilay & Bayrakdaroglu 2016). Due to the positive correlation between stock market and economy, the rise of stock market will positively affect the development of the economy and vice versa (Ake, & Ognaligui 2010). Thus, the decisions of investors on stock market play an important role in defining the market trend, which then influences the economy. To understand and give some suitable explanation for the investors' decisions, it is important to explore which behavioral factors influencing the decisions of individual investors and how these factors impact their investment performance. It will be useful for investors to understand common behaviors, from which justify their reactions for better returns. Security organizations may also use this information for better understanding about investors to forecast more accurately and give better recommendations.

1.5 Research Question

As this study provides some sound background for the future studies so there are questions which will be explored through this research.

Is the Financial Risk Tolerance affected by psychological biases of investors?

Is the Financial Risk Tolerance affected by overconfidence bias of investors?

Is the Financial Risk Tolerance affected by over optimistic bias of investors?

Is the Financial Risk Tolerance affected by regret aversion bias of investors?

Is the Financial Risk Tolerance affected by herding bias of investors?

Is the Financial Risk Tolerance affected by anchoring bias of investors?

Is the Financial Risk Tolerance affected by representativeness bias of investors?

What are the major dimensions of psychological bias which effect perceived financial investment behavior of investors?

Is there mediation influence of Financial Risk Tolerance in among Psychological biases and Perceived Investment performance?

Is there mediation influence of Financial Risk Tolerance in among over confident bias and Perceived Investment performance?

Is there mediation influence of Financial Risk Tolerance in among over optimistic bias and Perceived Investment performance?

Is there mediation influence of Financial Risk Tolerance in among regret aversion bias and Perceived Investment performance?

Is there mediation influence of Financial Risk Tolerance in among herding bias and Perceived Investment performance?

Is there mediation influence of Financial Risk Tolerance in among anchoring bias and Perceived Investment performance?

Is there mediation influence of Financial Risk Tolerance in among representativeness bias and Perceived Investment performance?

1.6 Significance of the Research

This research will be carried out in financial behavior to find out dimensions of psychological biases which effect financial risk tolerance of individual investors and their perceived investment performance. "Individual investors are inclined toward behavioral biases and that they make trading mistakes. However, are emerging market investors more inclined or less inclined toward behavioral biases and trading mistakes, as compared to developed market investors." This research will be helpful for the investors of financial markets in the sense that they should avoid those biases which are usually the reasons of their wrong financial investment decisions and minimize their perceived investment performance. With the help of this research investors will have the good knowledge about the psychological biases and their effect on financial investment performance.

The research is a good reference of stock-investment behavior for the investors to consider and analyze the stock market trend before making suitable decisions of investment. The research provides security organizations with a good background for their prediction of future stock-market trend and giving more reliable consultant information to the investors.

1.7 Research Objectives

Individual investors perceived investment performance is affected by many behavioral and psychological factors. In this study we will find out that psychological biases includes six biases affect investment performance of individual investors and financial risk tolerance plays mediating role among them or not.

CHAPTER 2

LITRETURE REVIEW

Behavioral finance activities to explain human behaviors and thoughts about marketing, there are various theories which conducted from social sciences that definitely decipherers the human behaviors (Shiller, 1998). In early 1970s different psychologist and economist studied on this domain (Thaler, 1994). This thought has become the domain of interest for psychologist and economist.

In this paragraph researcher is particularizing the different thoughts of behavioral economist and behavioral finance. Behavioral economist are also called Social economist's they analyze human's behaviors and economic choices in actuality and this supposition is sensible all the time for everyone. (Shiller,1998) used the different word to explain time period as "quasi-rational" this term is different than rational because quasi- rational are less rational than fully rational. On the other hand Simon (1957) denoted the different term as "bounded rationality" which also expounds the phenomena of rationality. Comparatively behavioral finance highlights that rationality cannot be expected as people have to function, and when we talk about the time period 'irrationality' in conservative finances way something that would be eradicated in a modest market. Researchers are trying to reveal a relatively large volume of proof that challenges this view. There are lots of examples which expose the irrational behavior and repetition in mistakes about judgment. Bernstein (1996) elaborate that they have proof that mostly people repeat the pattern of irrationality. They also decipher this point when human being uses the options, choices and alternatives then they face uncertainty. Irrationality pattern in which we include inconsistency and incompetence these types of patterns compel the human being to face the uncertainty. On the basis on this background, according to the scholars of behavioral finance the investment in selection-making became the domain of interest for them.

De Bondt and Thaler (1995) state that financial markets can be affected by investors' behaviors in the way of behavioral finance. If the perspectives of behavioral finance are correct, it is believed that the investors may have over- or under-reaction to price changes or news; extrapolation of past

trends into the future; a lack of attention to fundamentals underlying a stock; the focus on popular stocks and seasonal price cycles. These market factors, in turns, influence the decision making of investors in the stock market. Scholar identifies the factors of market that have impact on investors' decision making: Price changes, market information, past trends of stocks, customer preference, over-reaction to price changes, and fundamentals of underlying stocks (Waweru et al. 2008).

In an unlimited background, here the researcher uses the new term fundamental prices... The fundamental cost is "reduced sum of predictable future currency, in the situation purchasers get proficiency in the information about bargain price which dependable with the generic choice specification. Security's price equals its fundamental price (Barberis and Thaler 2003). The efficient Market assumption (EMH), according to this theory assets cost completely reflect the whole provided information. They focus on this judgment that real prices reproduce essential ideals, confirms that fees are exact as they are determined through marketers, There opinion are workable options to understand. According to EMH, all buyers are normal, the markets are supposed to be balanced.

Behavioral finance is paying full concentration toward the rational pattern. They are playing critical role finance. They also elaborating this phenomena people cannot be rational completely because they get different choices. To understand the phenomena of the behavior researcher hired the cognitive psychology. According to the perception of this concept behavioral biases must be revealed. Stockholders had a trend to be more agreeable to sponsor their prevalent stocks instead of losing if setting letdowns on sale is the pleasant choice in the mid-1980s (De Bondt and Thaler 1985).

Psychological reasoning is the tendency for persons to organize their domain into detached mental bills. Traders generally tend to deal with every component in their stock collection one after the other, which can result in incompetence, and changeability in making funding decisions (Shiller, 1998). Traders do now not appear to mark the link among unique funding opportunities, as is vital loose pricing. Expected utility theory (EUT) and prospect idea are taken into consideration as strategies to selection-making from specific perspectives. Prospect idea specializes in subjective selection-making stimulated by the buyers' cost system, whereas EUT focuses on traders' rational expectancies. EUT (expected utility theory) is called a normative model and also called descriptive

model in economic. This model denotes the analysis about decision making under the choice. This idea deciphers the thoughts of human being thought in decision making process. When they adopt different choices to make their decisions accurate. Human being compares their outputs with their past experience. This model supports the rational way of thinking. According to thinking investors should be ration in decision making (Tversky & Kahneman, 1974).

Khurshid, M. K et al. (2017) Investors are the key players in stock exchange. Sometimes the investor's decisions are rational and sometimes these decisions consist of irrational behavior. This study examined and explored the impact of cognitive biases on risky investment decision and more specifically the mediating role of risk perception is explored. There are various biases which put effect on investor decisions but this study explored the combined effect of two biases i.e. heuristic and overconfidence on risk perception, which is mediating variable and also examined the effect of these cognitive biases on risky investment decision. This study is conducted on the investors of Pakistan Stock Exchange. Adapted questionnaires are used. Initially 250 questionnaires were distributed out of which 215 questionnaires were returned. The data is run on SPSS 20. Cronbach's alpha is used to check the reliability of the instrument. Process macro is applied to check the mediating role of risk perception between cognitive biases and risky investment decision. The study finds a significant relationship between cognitive biases (heuristic and overconfidence) and risky investment decisions. Study also explored that risk perception play a mediating effect between cognitive biases and risky investment decision. Behavioral finance demonstrations that the psychology performs important part in the investment performance of investors. Cognitive errors are also included in the decision building of investors as feeling and emotions. Cognitive bias. They prefer their past experience which were not successful and they totally dines the requirements of present market. According to this investors should get knowledge before finalize their decision. It will be very accommodating in decision making. Investor is that person who invests his money on product with the hope of satisfactory financial return. Investor needs to enhance his financial return and reduce the risk level. To make sure his success, investor should work on the minimization of risk. It's not easy job. Investor should be rational about the decision making of investment. Ration investors make strategies' before the investment. But cognitive biases as distress, nervousness and greed compel the investor to take irrational decision. Stock Exchange is also called stock market, this is a systematized place which facilitates us with the

facilities of deal and obtaining of stock and its price which are fixed according to the demand and supply.

2.1 Behavioral reasons effects on investor policymaking

Behavioral funding theories are constructed on the bases of intellectual psychology, which displays those individual choice methods to be considered tough to understand the reasoning tricks. Because psyche of human being performs major role in the decision building of investors. Mental frame of investor also effects on the selection of techniques. Researcher's use the term "Cognitive illusion "to explain the phenomena about the psych of human beings. These cognitive illusions are classified into two groups 1st illusion is prevail caused by heuristic selection techniques and 2nd illusions caused by the adoption of mental frames, These two groups of ideas which specifies that human choice tactics are difficulty to understand.

2.2 Heuristic decision procedures

Heuristics is a strategy which adopt in decision making process and it makes decision making less tough in problematical and ambiguous environment. Heuristics are pretty valuable. Mostly it can be used in complex choices and unclear environments (Kahneman and Tversky, 1979). Different appropriate realistic motives for accepting a heuristic decision technique, especially at that time when we have confined time. But, heuristic decision policies may carry worse selections. Typical cases of delusions consequential from the practice of heuristics process.

2.3 Prospect theory

Prospect concept affords a background that elucidates behavioral factors effect on risk tolerance in investment selections. Even as possibilities are changed by means of selection weights Kahneman and Tversky (1979) criticized predicted software idea Expected Utility Theory (EUT) as evocative model of selection-making beneath hazard, that's unable to give an explanation about people how they are instantaneously concerned to both coverage and gambling. They exposed that human beings under weigh consequences which are in all likelihood in evaluation with those which

are certain. They also observed that people reply in a different way to equal conditions relying on whether or not they're supplied within the perspective of losses or gains.

Wood (1996) debates that it is easy to direct a final results simply by way of bordering the state to make a logic of coming damage or improvement, pain or delight. Lebaron (1999) submits that human beings come to be considerably greater anxious to chance of losses than they are delighted over comparable gains. In conditions in which the possibility of loss is relatively large, human beings show off chance-seeking rather than hazard behavior (Tversky, 1990). Filbeck et al. (2005) discuss that prospect opinion and EUT method selection-making from differing views. While EUT emphases on the rational outlooks of the shareholder, prospect theory inclines to cognizance on particular policymaking and is closely prompted by way of the shareholder's fee machine (Filbeck et al., 2005).

Loss aversion recognizes the intellectual connected to a damage is more than the rational return from an equivalent size benefits. It's may additionally inspire investor-herding behavior, for instance , to capitalize in valued firms, as those deliver implicit coverage in opposition to remorse (Koening, 1999). Lehenkari and Perttunen (2004) determined high quality and terrible past profits considerably beef up the undesirable relationship among the promoting tendency of buyers and capital losses, signifying that traders are chance averse. Loss aversion can be a not unusual article of investor behavior, however it commonly creates horrific selection-making and immediately influences on shareholder prosperity.

2.4 Trading behavior of investors

There are basic three elements that plays important role in investors behavior as share size trade, attention of investors and trading extent. Mostly investors hesitate to invest money caused by the previous loss. They prefer the invest fashion before investing. The propensity of person purchasers to be internet buyers of noticeable stocks is supreme on eras of bad returns (Odean, 1998b). Mostly investor get knowledge about the worth of investment. Caused by this type of decision making they can control on the risk factors. Some investors 'prefer the alter natives options. Which belong to their previous success? They consider their past experiences before taking decision. They learn their past experience (Odean, 1998b).

2.5 Impact of investor behavior on trading

Individual buyers have effects on the equity of market. For instance 70 % of the buying and selling changed into predicted at New York inventory change (NYSE). There are also different theories that decipher the trading in shape of equilibrium level of fees. From a behavioral economics viewpoint, herding can force influential trading. Caparrelli et al. (2004) discuss establishments can also clearly follow the front-runners below peer strain. They got reasons to occupation the identical shares to keep away from falling in the back of a noble group. This performance makes motion transaction (Crombez, 2001). However, the impetus can be disruption after attaining a definite level caused by the fact the price of becoming a member of the herd increases because the unusual returns boom. Regardless of the motives is probably in the back of the shopping for or promoting of stocks, there may be evidence of a flow in percentage fees resulting from the trade.

2.6 Exchange choices and stock share presentation

There are numerous investment choices connected to portfolio shares buying and selling, inclusive of shopping for, promoting, preference of stock and volume of stock to exchange.

2.6.1 The selling decision

According to the different reviews that investors reduce the decision of selling that belongs to the loss. They make their decision according to the future judgment. They make their own assumption about the loss and gain. Here the researcher discusses the buying price which is also called disposition effect. Investors promote the stocks according to the values. Here researcher is adding the prospect theory. Make judgments before selling whether it will useful or not for the investors. They have extra expectation about the output. They always think about the gain and loss during trading procedure. They have across sectional and confusing behavior toward the decision. They experience loss caused by the overthinking about large outputs (Genesove and Mayer (2001).

2.6.2 The buying decision

Decision making of investors plays important role in investor's life. This concept is different than selling concept. When investors buy something mostly take information about worth of this. Barberis and Thaler (2003) person traders is less compressed through devotion in stock for their promoting assessments .The promoting choice or shopping for assessment are otherwise run. They choose a inventory for selling, they are solely center of attention on the shares that presently have its place to them. In purchasing choice, people have probabilities to choice the desired stocks from the broad range of choosy foundations, this elucidates why influences of devotion have an effect on greater on the store shopping for selections than the stimulating choices.

2.7 Psychological biases

Psychological biases plays important role in the life of investors. Investors take decision on the basis of their mental capability. Mental biases mostly create the trouble in investor's decision making. Mental biases hit all buyers and may vary from investor to investor relying upon their investor persona kind (Pompian, 2011). This type of basis occurs caused by the irrational behavior of investors. Irrational behavior effects on the investors decision making. Those biases may be cognitive, illustrated via a bent to think and act in a certain manner or follow a rule of thumb. Biases can also be emotional: a bent to do so based totally on feeling in preference to reality.

This study investigated the role of behavioral finance and investor psychology in investment decision-making at the Nairobi Stock Exchange with special reference to institutional investors. Using a sample of 23 institutional investors, the study established that behavioral factors such as representativeness, overconfidence, anchoring, gambler's fallacy, availability bias, loss aversion, regret aversion and mental accounting affected the decisions of the institutional investors operating at the NSE. Moreover, these investors made reference to the trading activity of the other institutional investors and often exhibited an institutional-herding behavior in their investment decision-making (Waweru et al. 2008).

2.7.1 Overconfidence Bias

Overconfidence bias is the most popular psychological bias because it effects the investment performance of individual investors the most. According to this model predictions overconfident individual investors trade more than rational investors. To check this hypothesis questionnaires was filled from three thousands online broker investors out of 215 response and complete the questionnaires. Results shows that investors who thought that they are better than other investors in term of investment skills and performance invest more in stock but with compares with the market return they are not above or equal to average market return (Glaser & Weber 2007).

Kyle and Wang (1997) they say when we talk about the over confident investors they can trade more than other cognitive biased person. When we define the overconfidence, in this technique investors make their investment strategies on the bases of comparison and informative knowledge (Wang 2001). Researcher is also defining the new idea that overconfident investors can trade on good level than the rational investors. Overconfidence cannot exist for a more time it can be change through time and experiences of the past.

Here the researcher elaborates the three types of investors according to the literature. Overconfidence in shape of, (1) overestimation about real overall performance (2) Comparison of the performance with others (3) ideas about investment. According to these observations when we discuss the 1st one, according to this investors they make overestimate about the performance. They think they are best in their job. They will get good output after investment. They ignore the other all aspects of investment which can create the trouble in future. But they ignores all aspects caused by the over estimation. Now 2nd one, investors make comparison with other as sometime they compare their failures or success with the past experience. And sometime compare with other outputs. This type of comparison creates troubles in the investment procedure. 3rd one, they think they are very perfect and their decision was very perfect. And they will get extra output. Sometime they think that they are higher than others (Moore, & Healy, 2008).

Mostly investors become the victim of overconfidence bias. Overconfidence means when a person thinks his skills are perfect and no anybody compare with his mental capability. He is very perfect in his decision making. The basic motive of this is to verify capability of investors in decision making. Here researcher is discussing the Tunisian market. The investors of Tunisian market also victim of overconfidence. According to the article men have higher confidence level than woman?

Women have low level of confidence. Tunisian investors' get beat or loss in the market caused by the overconfidence (Zaiane, & Abaoub 2010).

Bashir et al. (2013) explore the relationship between demographics, personality traits and level of confidence. The impact of this paper is dual, first one is to measure the determinants of overconfidence in employees and second one is in students. To explore the relationship between these variables primary data was collected from employees and students through questionnaires two different populations had been selected and numerous statistical technique (Pearson correlation, Pearson regression, Chi-square, and Kolmogorov-Smirnov tests) are used for analysis purpose using SPSS software on a 100 sample size. Research discoveries shows that in employees when Openness to experience increase , overconfidence level decrease, however all remaining personality traits(conscientiousness, agreeableness, emotional stability and openness to experience) is correlated with overconfidence. In students there is no correlation between overconfidence and any of the personality traits. The regression analysis findings show that no linear relationship exists between independent and dependent variable in employees for individual personality traits except of emotional stability. Only emotional stability has a significant predictor of overconfidence among all five personality traits. However the overall personality is the significant predictor of overconfidence in employees. For students, neither individual personality traits nor overall personality has linear relationship with overconfidence.

2.7.2 Over Optimistic Bias

Optimism bias is also called unrealistic or comparative optimism. They linked to the cognitive errors. They always make comparison the occasion with past. Here researcher uses the term regret aversion. They think that if we invest than it will be useful or not. Sometime they feel regret after failures. This type of situation happens caused by overconfidence and irrational behavior. Than they feel extra fear during investment procedure. They want to invest money on desirable situations. And then they regret after getting small output caused by bad decision making (Kubilay & Bayrakdaroglu 2016).

Optimism bias also linked with cognitive error. Researcher uses both terms 1st optimism and 2nd reward linked interest bias. Both are connected to the mental health. Both biases will discuss

separately. Here researcher examines the both biases in new dimensions and also displaying the cognitive error which totally affects the decision making method of investors. Researcher uses the term neuropsychological errors to reveal the different aspects of the studies. Cognitive error effect the behavior of investors. They assume different ideas about the investment. They think as they will get extra output caused by over expectations. They consider that they are very proficient in their task. This type of misconception creates the troubles for the investors. Which create the cognitive errors? Investors use different method to enhance their output. They say that optimism and reward linked bias both effects on the mental health of investors. They do over thinking whether their investment will give extra output or not. They make their own judgment through the past experience (Kress & Aue 2017).

2.7.3 Regret Aversion Bias

Jureviciene and Jermakova (2012) explicit that even though a exquisite majority of subjects have high educational level, they avoid monetary problems, take medium risks and like greater dependable investment instruments. Regret aversion bias spatial version in attitudes performs an essential position in choices on geographical advertising efforts, along with targeting of junk mail campaigns and scheduling of income representatives. Further, for financial carrier groups, its miles essential to time table their financial planners across servable geographical areas primarily based on the spatial heterogeneity in purchaser possibilities and attitudes towards financial merchandise. But, reading these attitudes is hard caused by the fact they're latent in nature, often spatially correlated, and facts is probably sparse for some regions (Marcatto & Ferrante 2008).

2.7.4 Herding Bias

Herding bias is totally different than optimism bias and overconfident bias. According to the perception of the herding bias they prefer social interactions and informative knowledge about the market outputs. And now researcher will discuss the consequences of the herding bias. There are different theories which decipher this bias. Researcher is discussing the classification of consequences through herding bias. Herding also effects the behavior of investors. Which also closely linked to the cognitive errors? Herd behavior is that type of assumption which man and woman do not make personally they judge the assumptions of others (Le Luong & Thi Thu Ha, 2011).

Here researcher adds the example of china market. Chines trades have distinctions in behavioral biases. Basic three behavioral biases are mention, they buy that shares in the market which are appreciated in demand, they also compare the outputs with past like representative bias. Chines investors are over confident than U.S investors. And they seem also overconfident in investment procedure. Herd behavior can be irrational and rational. Irrational behavior totally based on the psychological aspects. A rational herd behavior (income-seeker) may additionally bring about a financial and economic increase, however in time ends in (endogenous) financial instability. Decamps and Lovo (2002) state that the pre-needful for succeeding a funding selection as herd behavior is that an investor modifications its funding decision in step with the decisions of different investors. Banerjee (1992) has said that investors imitate other investors instead of utilizing their facts and this circumstances may be considered as herd conduct. They prefer the people judgment and finding than their own personal results and outcomes. They totally ignore their own experience before the enlightens of other's experiences. They don't believe in their mental capabilities. They donot use their personal experience to make their decision perfect and accurate. They prefer the other's people experience and conclusions than their own judgments.

Barbara Alemanni and Jose Renato Haas Ornelas (2006) of their observe entitled through Herding conduct by means of fairness overseas traders on rising markets explained that, The diploma of herding conduct may impact the volatility of returns. Investors are regularly blamed to enter and exit emerging markets in herds, bringing instability to these markets in particular at some stage in crisis. Herding behavior no longer only effect on rising markets but also to the evolved countries, if here we add the EUT people prefer the choices caused by the bases of the choices they promote the risk. Risk also confuse the investors. Than uncertainty occurs which can be harmful for the investors.

2.7.5 Anchoring bias

Anchoring occurs in the condition when human beings practice some preliminary models to make assessment, which biased for the preliminary assessments as distinct opening facts produce special evaluations (Karasek R et al., 1998). In financial marketplace, anchoring upswings when a fee scale is continual through current annotations. Traders continually talk to the preliminary purchase

fee whilst selling or studying. For this reason, today costs are frequently determined by way of those of the past (Adrian and Brunnermeier 2011). Anchoring compel stakeholders to define a selection for a proportion price or organization's income primarily based at the ancient traits, resulting in underneath-reaction to unexpected changes. Anchoring has particular joining with representativeness as it additionally mirrors that humans regularly consciousness on latest enjoy and tend to be extra optimistic while the marketplace rises and greater pessimistic when the market falls.

Investors past experiences mirror worthy or wicked choices. Choices which are grounded on previous portion of evidence is called anchoring bias. Our original material not only possessions toward investors opinion but also shareholder's choices are grounded on previous experiences. Risk opinion effects to our thoughtful mind (Shiller 2000).

Anchoring distressing our awareness about the product is investigated in numerous readings. Consumers compare the alternatives during the decision making to make their decision rational. In the same way investors also compare the things, option and choices in decision making. Anchoring has two way dimensions, when investors become the victim of over confidence. And other one is excessive trading also effects on investor when they compare their past experiences with present experience. They ignore the conditions of present time. Overconfidence enhances power and willpower, mental talent, and threat broadmindedness. In other phrases, overconfidence can assist to sell professional overall performance. It is also mentioned that overconfidence can decorate other's belief of one's talents, which may also help to acquire quicker merchandising and extra funding period (Osler 2004).

2.7.6 Representativeness Bias

The representativeness bias is used when making judgments about the probability of an event under uncertainty. It is one of a group of heuristics (simple rules governing judgment or decision-making) proposed by psychologists (Kahneman 1972). The availability heuristic is a mental shortcut that relies on immediate examples that come to a given person's mind when evaluating a specific topic, concept, method or decision Representativeness (Le Luong & Thi Thu Ha, 2011).

Now economic places, it is called intellectual shortcut. Representativeness can happen when traders are seeking for to shop for 'hot' stocks and to escape themselves from shares (De Bondt & Thaler, 1995). Representativeness bias create a lot of complication in investor's decision making strategy. They select this type of investment which was praiseworthy in the market which can now give then the large output according to their investment. And they make prediction about the future investment. After making predictions they make great expectations. According to the literature, we examine representative bias. In Gamblers' fallacy investors do overthinking and unfortunately assume that a fashion will opposite. This gambler fallacy indicates the purchasers to count on the stop of a run of accurate (or negative) marketplace returns (Barberis, 2001).

Representativeness denotes the documentation of relationship in which investors experience the future prediction and large expectations. These prediction compel them to make rational after getting the loss. To some extent after the experience of loss they become the rational. Representativeness may moreover outcome in some biases containing on humans positioned an extreme amount of weight on current appreciate and discount the joint lengthy-term fee (Ritter, 2003). Its sample of the bias is that financiers frequently suppose a manager's large value after some enhancement. Representativeness furthermore consequences in the so-referred to as "sample length forget" which takes place when humans attempt to deduce from too few samples (In stock market, although financiers stay sharp for to purchase "stocks than poor stock. This conduct is a cause of investor overreaction. Biasness is a concept in which person has no open mind in decision making. Human being can be biased on the different for instance culture, language, sect, regions and others. Perceptive biases are something different as philosophy of investors plays significant role in decision making process. Investor's analysis the amount of capital and investment. According to the Traditional advance theory investor's think about the current facts and figures. They keep away themselves from the concept of biases and they show rational behavior (Kempf & Ruenzi, 2006).

2.8 Financial Risk Tolerance

We examine a big database of psychometrically derived economic hazard tolerance rankings (RTS) and associated demographic facts. We discover that human beings's self-assessed risk tolerance generally accords with RTS. Moreover, we discover that gender, age, wide variety of

Predicted, marital fame, income, and wealth are substantially associated with the RTS. Notably, the connection among age and chance tolerance famous a sizeable nonlinear shape. (Hallahan, Faff, & McKenzie, 2004).

This paper explores conceptual, methodological, and empirical issues related to the development of a financial risk-tolerance assessment instrument. Financial risk tolerance is a significant factor in a number of household financial decisions, yet few recognized, valid, and reliable methods of assessment are available for use by financial service providers and educators. Empirical results from a multistage development of a 13-item risk assessment instrument are discussed. The multidimensional instrument is presented as the foundation for the development of a more widely used and accepted index. Future use by practitioners and researchers is encouraged to further validate the usefulness of the instrument. (Grable, & Lytton, 1999).

The persistence of this exploration turned into to encompass the inspective track of survey, as initiated through (Carducci, 1998), concerning chance taking in regular cash topics via inspecting demographic, socioeconomic, and attitudinal traits that can be used either for my part or in mixture as factors of economic chance forbearance. Discriminant examination consequences specified that danger tolerance changed into related to being male, older, married, professionally employed with better earning, extra training, extra economic information, and enlarged monetary hopes. Results advise that the accomplishment of monetary fulfillment can be defined, as a minimum in part, by way of an aggregate of a person's persona traits and socioeconomic history (Grable, 2000).

The purpose of this study is to explore the extent to which individuals' knowledge of retirement planning, future time perspective, and financial risk tolerance influence retirement saving practices. A total of 270 young working adults participated in the study. Regression analyses reveal that each of the three variables is predictive of saving practices, and they interact with one another as well. From an applied perspective, the findings suggest that counseling and intervention efforts aimed at promoting retirement saving should differentially target individuals on the basis of these three psychological dimensions (Jacobs & Hershey, 2005).

2.9 Investment performance

Investment performance is the return on an investment portfolio. The investment portfolio can contain a single asset or multiple assets. The investment performance is measured over a specific period of time and in a specific currency. Investors often distinguish different types of return. One is the distinction between the total return and the price return, where the former takes into account income (interest and dividends), whereas the latter only takes into account capital appreciation.

The basic model of asset pricing is in vibrant ux. The purely rational approach is being subsumed by a broader approach based upon the psychology of investors. In this approach, security expected returns are determined by both risk and misevaluation. This survey sketches a framework for understanding decision biases, evaluates the a priori arguments and the capital market evidence bearing on the importance of investor psychology for security prices, and reviews recent models (Hirshleifer, 2001).

2.10 Conceptual Framework

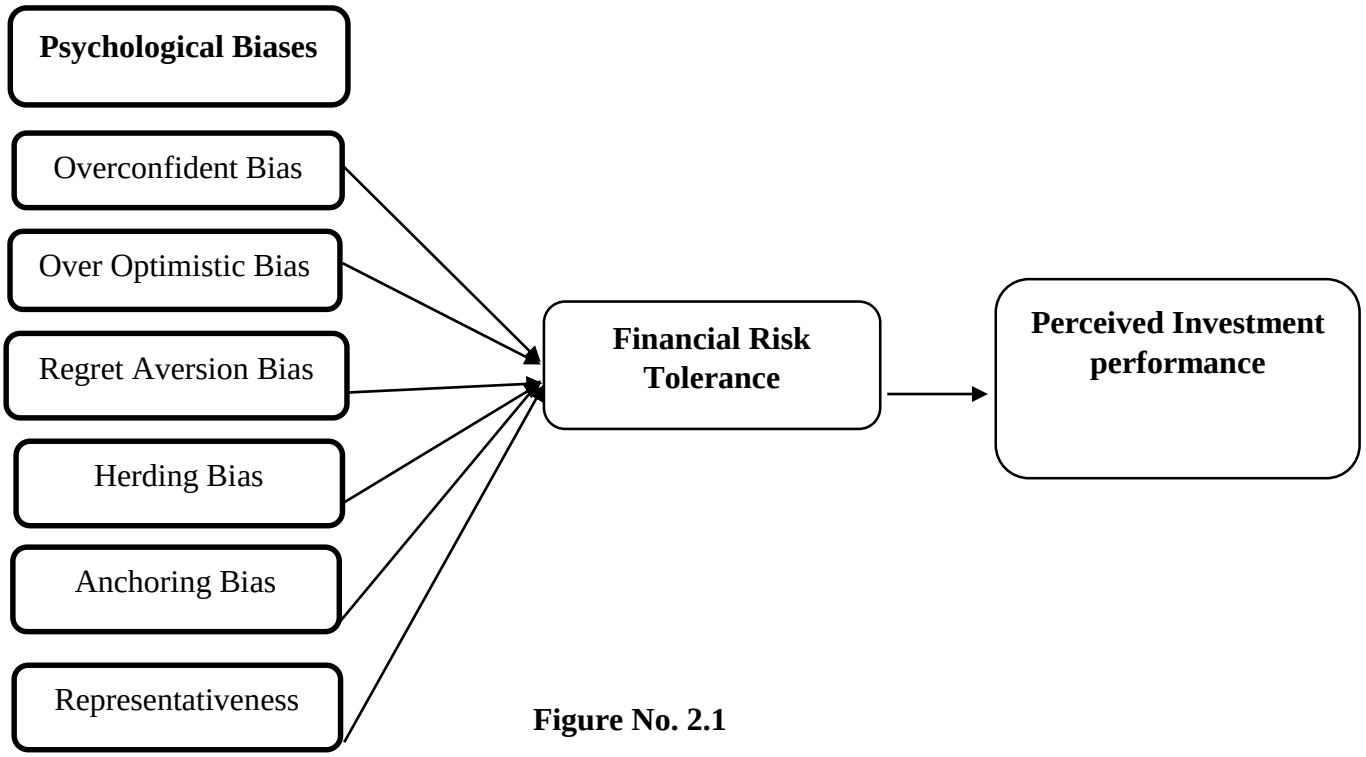


Figure No. 2.1

In this study according to the predictor variable, predicted variable and mediating variable Hypotheses of the model are:

H1: There is an impact of Psychological biases on perceived Investment performance of investors.

H2: There is an impact of Psychological biases on perceived Investment performance with mediating effect of financial risk tolerance.

H2a: There is an impact of Overconfidence bias on perceived investment performance with mediating effect of financial risk tolerance.

H2b: There is an impact of Over Optimistic bias on perceived investment performance with mediating effect of financial risk tolerance.

H2c: There is an impact of Regret Aversion bias on perceived investment performance with mediating effect of financial risk tolerance

H2d: There is an impact of Herding bias on perceived investment performance with mediating effect of financial risk tolerance

H2e: There is an impact of Anchoring bias on perceived investment performance with mediating effect of financial risk tolerance

H2f: There is an impact of Representativeness bias on perceived investment performance with mediating effect of financial risk tolerance.

CHAPTER NO 3

RESEARCH METHODOLOGY

3.1 Methods

The methodology defined in this chapter which is used to analyze the results of this study. The scientific methodology is the base of the research which comprises techniques, procedures and some set of rules. The techniques which are used to conduct this study of research play significant role in the field of business.

3.2 Nature of Research

In Current research we will analyzed the influence of psychological biases on investment concert with intermediating effect of financial risk tolerance, psychological biases including over optimistic bias, over confidence bias, herding bias, anchoring bias, regret aversion bias and representativeness bias. The determination of this research to explore the influence of each bias on investment performance of individual investor's portfolios with mediating impact of financial risk tolerance.

3.3 Research Approach

To check the impact of psychological biases on investment performance with intermediating impact of financial risk tolerance we will use quantitative research approach. In this research approach first we collect data from respondents through questionnaires and change the responses into numbers (Amounts).

3.4 Data Types

In direction check the influence of psychological biases on investment performance with intermediating role of financial risk tolerance, primary data was collected through questionnaires

by using continent sampling technique. Target inhabitants for this research study are investors of stock market from Faisalabad and Lahore.

3.5 Population

Researcher wishes to get response to collect data form group of people for research that are simply based on sample statistics defined population According to Berg (2004) population is the cluster of peoples scholars wanted to study about". Determination of this study is to check the impact of psychological biases on investment performance with intermediating role of financial risk tolerance in stock investing sector. Investors from Lahore and Faisalabad city were nominated as target residents of the study.

3.6 Sample Size

The scholars choose sample because to collect data for whole population is very difficult and time taking process, to solve this problem scholars select a sample from population. Sample is the sub-set of population and represents all the characteristics of the population. In this study target "population is stock investors from Lahore and Faisalabad. Total number of questionnaires distributed were 275 and 243 were collected back from stock investors.

3.7 Methods of Data Collection

To collect data many techniques were used like interviews, observations, case studies and surveys. In this study we are using survey data collection technique and use questionnaires research tool to collect data. Questionnaires were used to gather data from stock investors of Faisalabad and Lahore city over a period of 8 months.

3.8 Sampling Technique

Sampling technique is the method how we select the sample from whole population, in this study we are using convenient sampling (Snow ball) sampling technique. Convenient sampling technique is the type of sampling technique in which sample is taken from population where we

can easily contact and reach, convenient sampling (Snow ball) sampling technique is also less time consuming, easy method and economical way of sampling.

3.9 Instrument Development

Instrument or questionnaire are developed with the help of previous studies. In this study Psychological biases are predictor variables including (overconfidence bias, over optimistic bias, regret aversion bias, herding bias, anchoring bias and representativeness bias), investment performance is Predicted variable and financial risk tolerance used a mediating variable. In this study five questions/items are used to measure the Predicted variable financial risk tolerance which are used by (Jacobs-Lawson, 2005). Four questions will be the items to measure Over confidence bias, which used by (Zaiane & Abaoub 2010). Five question will be the items to measure over optimistic bias, which is used by Kubilay & Bayrakdaroglu 2016). Five question will be the items to measure regret aversion bias, questionnaire used by (Marcatto & Ferrante 2008) is adapted. For Herding bias (4 items) used by (Le Luong, 2011) and Anchoring bias (4 items) the questionnaire is adapted which is used comprising by (Q.i and ii Le Luong & Thi Thu Ha, 2011) and (Q.iii and iv Murithi, 2014).

3.10 Conceptual Framework

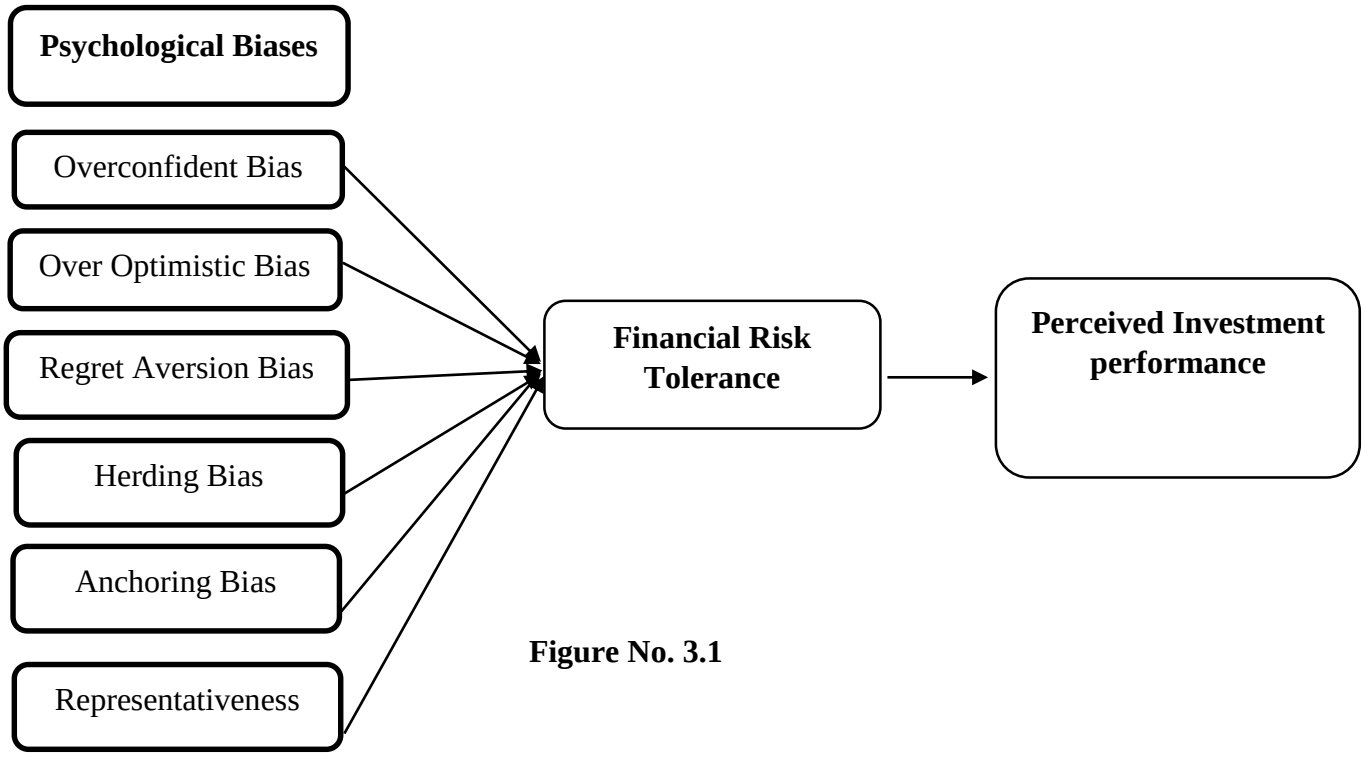


Figure No. 3.1

3.11 Definition of variables

3.11.1 Investment performance

On this study, funding performance is the established variable to be able to be measured with the assist of three items (Le Luong & Thi Thu Ha, 2011). Investment performance is the go back on a funding portfolio. The investment portfolio can incorporate a single asset or a couple of property. The funding performance is measured over a particular period of time and in a particular currency. Buyers regularly distinguish unique styles of return. One is the difference among the entire go back and the rate go back, where the previous takes into account income (dividends), whereas the latter handiest takes into account capital appreciation.

3.11.2 Financial Risk Tolerance

On this study, economic behavior is to be used because the mediator variable, that is to be computed with the help of financial hazard Tolerance. Hazard tolerance is the degree of variability in funding returns that an investor is inclined to resist. Financial chance tolerance will be measured through the use of objects (Jacobs-Lawson, 2005).

3.11.3 Psychological biases

Psychological biases are the predictor variables in this examine in order to be measured through the subsequent measurement. Psychological biases also known as cognitive biases are systematic errors in patterns of judgments and deviation from norms. A bias is basically a misjudgment or mistake in evaluating, remembering and reasoning. These systematic errors affects us directly or indirectly in our daily communication and decisions. Cognitive biases also effect investors of financial markets also distress their financial assessments and their assets performance.

3.11.3.1 Overconfidence bias

The over confidence bias effect is a nicely-mounted bias wherein a person's subjective self-belief in his or her judgments is reliably more than the goal accuracy of these judgments, mainly when confidence is fairly high (Zaiane & Abaoub, 2010). . They compare themselves with other. And they don’t over thinking on the planning and strategies. They believe in the self-confidence. They

are also called the irrational investors. And their trading level is higher than the ration thinkers. They take some time wrong decision caused by the overconfidence.

3.11.3.2 Optimism bias

Optimism bias (additionally acknowledged as unrealistic or comparative optimism) is a cognitive bias that causes a person to believe that they're at a lesser chance of experiencing a poor occasion in comparison to others. people displaying remorse aversion keep away from taking decisive moves because they worry that, in hindsight, something path they select will prove much less than choicest. Basically, this bias seeks to prevent the pain of remorse associated with poor decision-making (Kubilay & Bayrakdaroglu, 2016). According to this bias people make extra expectations about the input. They think in this procedure they are extra efficient and proficient in the market they cannot take wrong decision. They have full believed in their abilities. They think that their strategies and planning are more accurate than other.

3.11.3.3 Regret aversion bias

Regret aversion bias spatial version in attitudes plays an essential role in selections on geographical marketing efforts, together with targeting of junk mail campaigns and scheduling of income representatives. Similarly, for economic carrier businesses, it's far vital to time table their economic planners across servable geographical regions primarily based on the spatial heterogeneity in customer choices and attitudes in the direction of economic merchandise. However, analyzing those attitudes is hard caused by the fact they're latent in nature, often spatially correlated, and records is probably sparse for some regions (Marcatto & Ferrante, 2008).

3.11.3.4 Herding bias

Herd effect bias behavior represents the tendency for a character to mimic the moves of a bigger organization, whether those movements are rational or irrational. In lots of cases, herd conduct is a hard and fast of decisions and actions that an individual might no longer necessarily make on his or her very own (Le Luong & Thi Thu Ha, 2011). This type of bias also linked to the cognitive errors. According to this people prefer the knowledge of other people than their personal knowledge. They mimic the crowed observation and strategies than their own conclusions. They

even ignore their own personal experiences to make their strategies accurate and authentic. They compare their outputs with the outputs of others.

3.11.3.5 Anchoring bias

Anchoring bias is a cognitive bias for a person to depend too closely on an preliminary piece of data presented (referred to as the "anchor") while making decisions. In the course of decision making, anchoring occurs when people use this initial piece of records to make subsequent judgments (Le Luong & Thi Thu Ha, 2011). According to this bias they prefer the old and previous knowledge. They neglect the condition and situation of the present time that what will be the requirement of the present time. They totally depend on the previous knowledge. It can be obtrusive for the investors.

3.11.3.6 Representativeness bias

The representativeness bias is used whilst creating judgments approximately the opportunity of an event below uncertainty. Its miles considered one of a group of heuristics (simple guidelines governing judgment or decision-making) proposed via psychologists (Kahneman, 1972). The provision heuristic is an intellectual shortcut that is based on instantaneous examples that come to a given man or woman's thoughts while evaluating a selected subject matter, concept, approach or decision Representativeness (Le Luong & Thi Thu Ha, 2011).

3.12 Pilot Survey

Before collect the required data set researchers perform a pilot survey to check the reliability and validity of selected instrument. Pilot survey also helps the researcher to refine the errors and modified the items according to respondents and culture of the population. In pilot survey we use 20 respondents' data to check the reliability and validity of our instrument. Pilot survey is also

helpful because we use this collected data to complete out sample size. After checking the reliability and validity of instrument some items of the instrument are increases and modified.

3.13 Handling, Coding and Entering of Data

In this research handling of Filled questionnaires is very difficult because it's a long and time taking process first you have to set a meeting time with respondents explain his/her about the research and then give them questioners to filled, If respondents filled the questionnaire on spot otherwise after a period of time visit again and collect questionnaire and store in a safe place.

After completion of data second stage is to coding and entering the data in to research software. In this research we are using SPSS (Statistical Package for Social Sciences). Codes which are used to enter data in SPSS are 1, 2, 3, 4 and 5.

3.14 Data Analysis

Analysis of data is the process of collecting, inspecting, arranging and modification of data with the goal of desires results. In this study we are using Statistical package of social sciences (SPSS) software for data analysis.

3.15 Statistical Analysis Methods

In current study we were used following statistical analysis methods to examine the statistics set. Regression investigation is the type of statistical analysis techniques in which we analyze one or more than one predictor variable on a Predicted variable. Two types of regression are simple linear regression and multiple linear regression. In current study we were used both types of regressions.

3.15.1 Simple Linear Regression

Simple linear regression is the type of regression in which we examine the influence of one predictor variable on one Predicted variable. Regression equation of simple linear regression states as

$$Y = \boldsymbol{\alpha} + \boldsymbol{\beta} x$$

In equation

Y represents the Predicted variable

x represents the predictor variable

β Represents the Coefficient of predictor variable

α Represents the constant value

3.15.2 Multiple Linear Regression

Multiple linear regression is the type of regression in which two or more predictor variables are analyzed on predicted variable. Multiple linear regression states as

$$\boldsymbol{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots\ldots\ldots\ldots + \beta_n X_n + k}$$

In equation

Y represents the Predicted variable

α Represents the constant value

β_1 Represents the Coefficient of predictor variable 1

β_2 Represents the Coefficient of predictor variable 2

β_3 Represents the predictor variable number 1

X_2 Represents the predictor variable number 2

3.16 Challenges in Field Experience

Assembly of statistics from responders was the most difficult phase of the research. Throughout the collection of data from respondents is completed in 8 months and many complications were tackled by the researcher. The respondents were informed to the purpose of the study and importance of Psychological biases on investment performance in financial sector. Following problems were faced while survey of individual investors:

The investors feel uncomfortable to respond the questions which linked to their socio-economic life.

Convincing their investors, in order to get the appropriate response of questions and aware them to understand the purpose of the study.

3.17 Measurements & Scaling

Measurements is the process of recording the observation and respondents responses, it can be in the form of numbers and symbols. In scaling is the method of setting some rules and levers for respondents to response the given situation according to these numbers and symbols.in this research five responses liker scale was used

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree/Neutral	Agree	Strongly Agree

CHAPTER NO. 4

DATA ANALYSIS AND RESULTS DISCUSSION

The chapter fourth known as results consists of three major segments, in first segment we will perform descriptive analysis, in second segment we will perform demographics analysis and in the third and the last segment we will perform correlation and regression analysis.

Reliability and validity of the instrument is very essential for researcher to check that the relevant and reliable items of the instrument. In current study we will use Statistical package of social sciences (SPSS) to check the reliability and validity of instrument and its items.

Table No. 4.1 : Processing Summary

		N	%
Cases	Valid	241	99.2
	Excluded[a]	2	.8
	Total	243	100.0

List wise deletion based on all variables in the procedure.

In Statistical analysis Cronbach alpha value is used to check the reliability of variables. Thump law for Cronbach alpha valve is that if greater than 0.70 that indicates as good, greater than 0.80 is better and greater than 0.90 is best.

4.2 Reliability Statistics

Variables	Cronbach's Alpha	N of Items
Over Optimistic Bias	.719	5
Regret Aversion Bias	.624	5
Representativeness Bias	.727	2
Overconfidence Bias	.854	4
Herding Bias	.539	4
Anchoring Bias	.803	4
Financial Risk Tolerance	.677	5
Investment Performance	.899	3

Table number 4.2 shows that there are 5 number of questions/items are used to measure Over Optimistic Bias. Cronbach alpha of over optimistic bias is 0.719 which in good according to rule of thumb, 5 number of questions/items are used to regret aversion bias. Cronbach alpha regret aversion bias is 0.624 which in good according to rule of thumb, Cronbach alpha of representativeness bais is 0.727 and 2 questions/items are used, over confidence bias Cronbach alph is 0.854 and 4 items/questions are used, herding bias Cronbach alpha is 0.539 and 4 items/questions are used. Cronbach alpha of anchoring bias is 0.803 and 4 items/questions are used, financial risk tolerance Cronbach alpha is 0.677 ans 5 items/questions are used and last and dependent variable of the study perceived invetsmnet performance Cronbach alpha is 0.899 and 3 items/questions are used.

4.1 Descriptive statistics

In uni-variante analysis also known as descriptive measurements analysis is the simplest method of evaluating statistics. Uni-variante investigation helps us to sum up the data and find

arrangements and similarities in the data. Mean value, standard deviation value, frequencies of respondents, details of totals respondents and their percentages and define each variable.

4.2 **Demographics of respondents**

The demographics are features of a population, for example age, gender, religion, monthly income level, marital status, field of study, education level etc. In this study we are using following demographics

- Institution category
- Field of study
- Education level
- Age
- Monthly average income
- Gender
- Marital status

Table 4.3: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	225	92.6	93.4	93.4
Valid	Female	16	6.6	6.6	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Table no 4.3 gender table described that total number of respondents are two hundred and forty one (241) in current study, further than male respondents frequency shows they are 225 and female respondents frequency show they are 16. This specifies that 93 are male and 7% are female respondents.

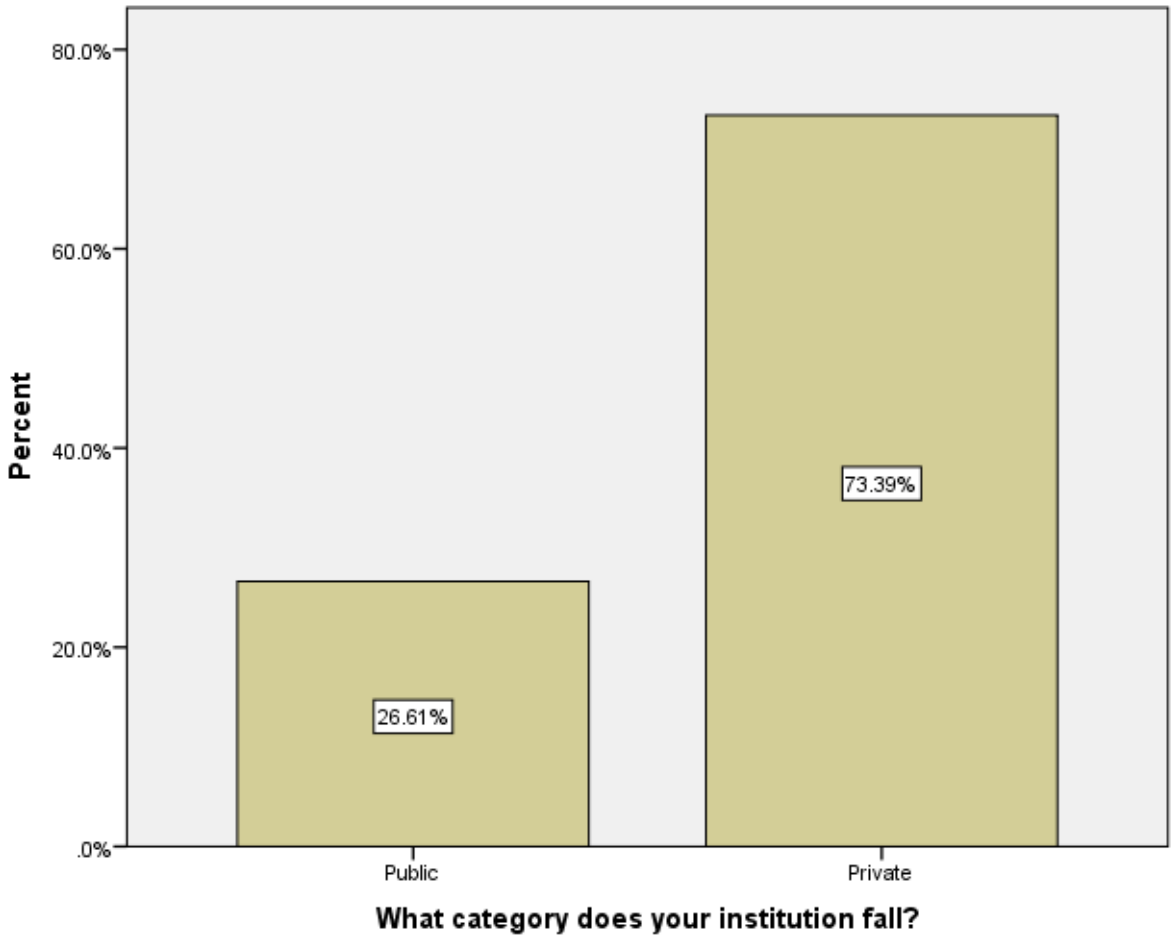
4.2.1 Distribution of Respondents regarding their Institution category?

According to table shows that over-all quantities of targeted investors in this study are 243, out of which 58 belongs to public sector and 160 belongs to private sector. This indicates that public limited companies respondents approximately 24 % and private sector respondents are approximately 66% and 10% respondents do not choose any sector. Mainstream of targeted investors are from private sector.

Table 4.4: Institution Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Public	58	23.9	26.6	26.6
	Private	160	65.8	73.4	100.0
	Total	218	89.7	100.0	
Missing	System	25	10.3		
Total		243	100.0		

Figure No. 4.1: Institution Category



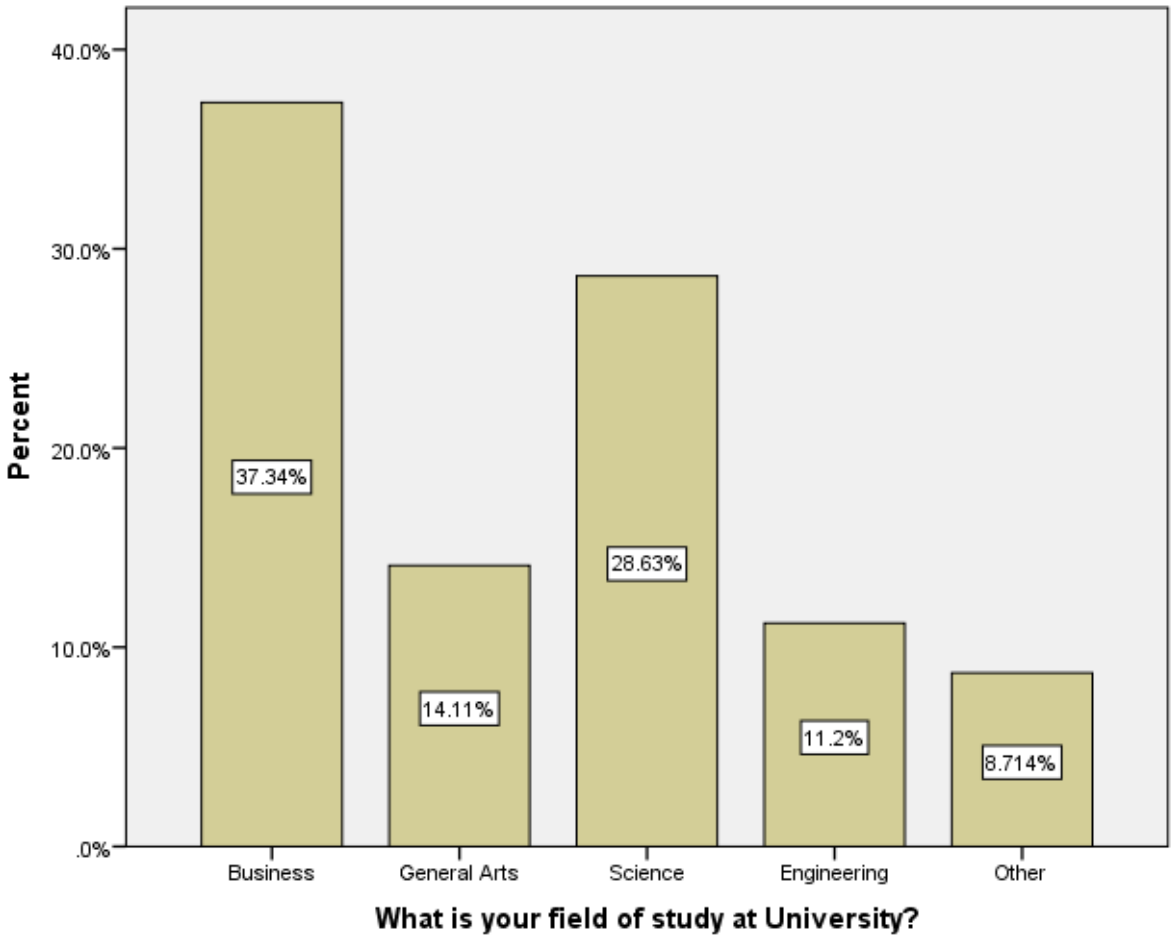
4.2.2 Distribution of Respondents regarding their Field of Study?

According to table number 4.5 shows that over-all numbers of targeted investors are 243 in this study, further than which 90 respondents from Business studies, 34 respondents from general studies,69 respondents from science studies,27 respondents from engineering studies and 21 respondents from other studies. Table shows that Business studies respondents out of total respondents are about 37%, general arts studies respondents are about 14 %, science studies respondents are about 29 %, engineering studies respondents are about 11% and other studies respondents are about 9%. Majority of targeted investors are from business sector.

Table 4.5: Field of study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Business	90	37.0	37.3	37.3
	General Arts	34	14.0	14.1	51.5
	Science	69	28.4	28.6	80.1
	Engineering	27	11.1	11.2	91.3
	Other	21	8.6	8.7	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Figure No. 4.2: Field of study



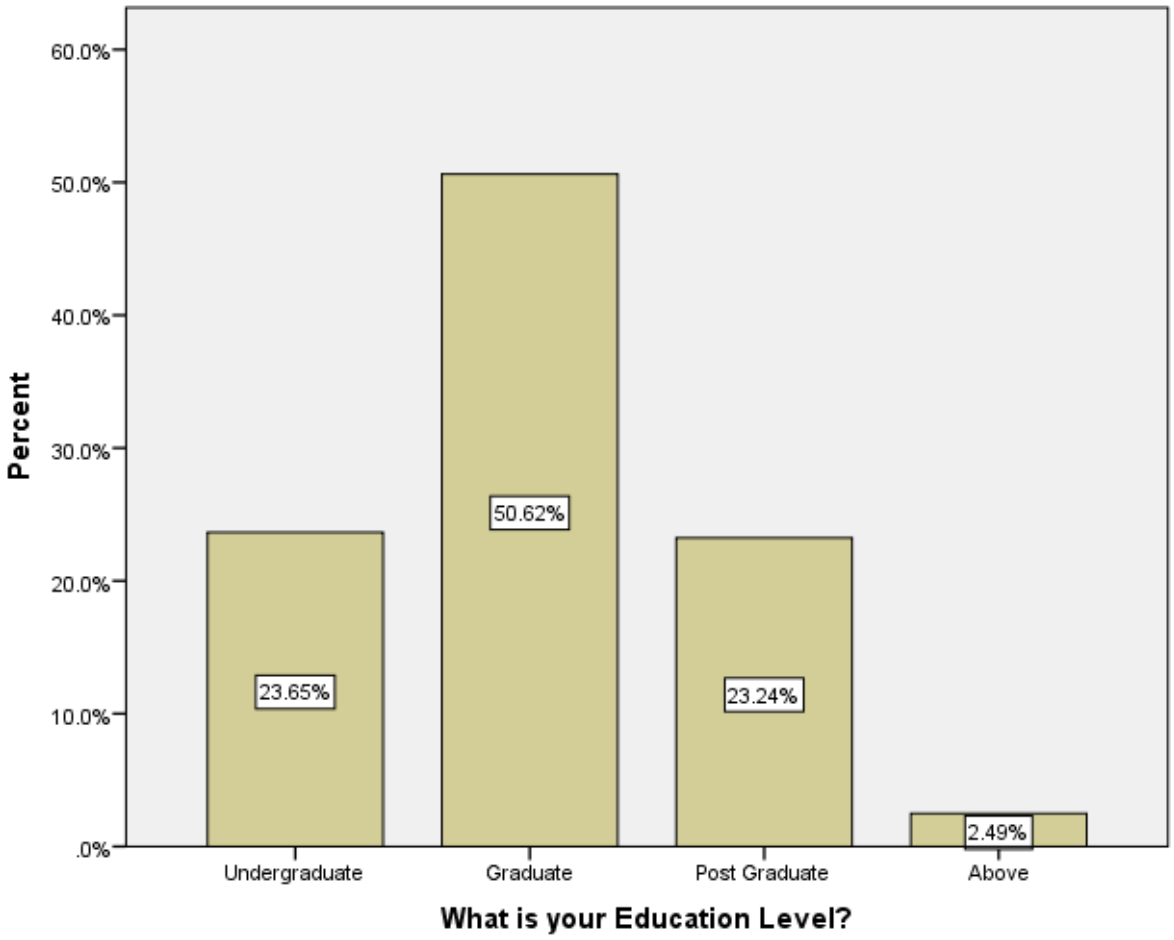
4.2.3 Distribution of Respondents regarding their Educational Level?

Total number of respondents are 243,out of which 57 respondents and 23% are undergraduate, 122 respondents and 50% are graduate (16 years) degree holder, 56 respondents and 23% are postgraduate, while 6 respondents and 2.5% had above education level. More than 50% out of 100% respondents are graduate (16 years) degree. According to this research more competent people link the stock sector. According to chart 4.4 also indicates education level of the targeted investors where 50.2% of the total population are graduate degree holders (16 years education).

Table 4.6: Education Level

		Frequency	Percent	Valid Percent	Cumulative Percent
	Undergraduate	57	23.5	23.7	23.7
	Graduate	122	50.2	50.6	74.3
Valid	Post Graduate	56	23.0	23.2	97.5
	Above	6	2.5	2.5	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Figure No. 4.3: Education Level



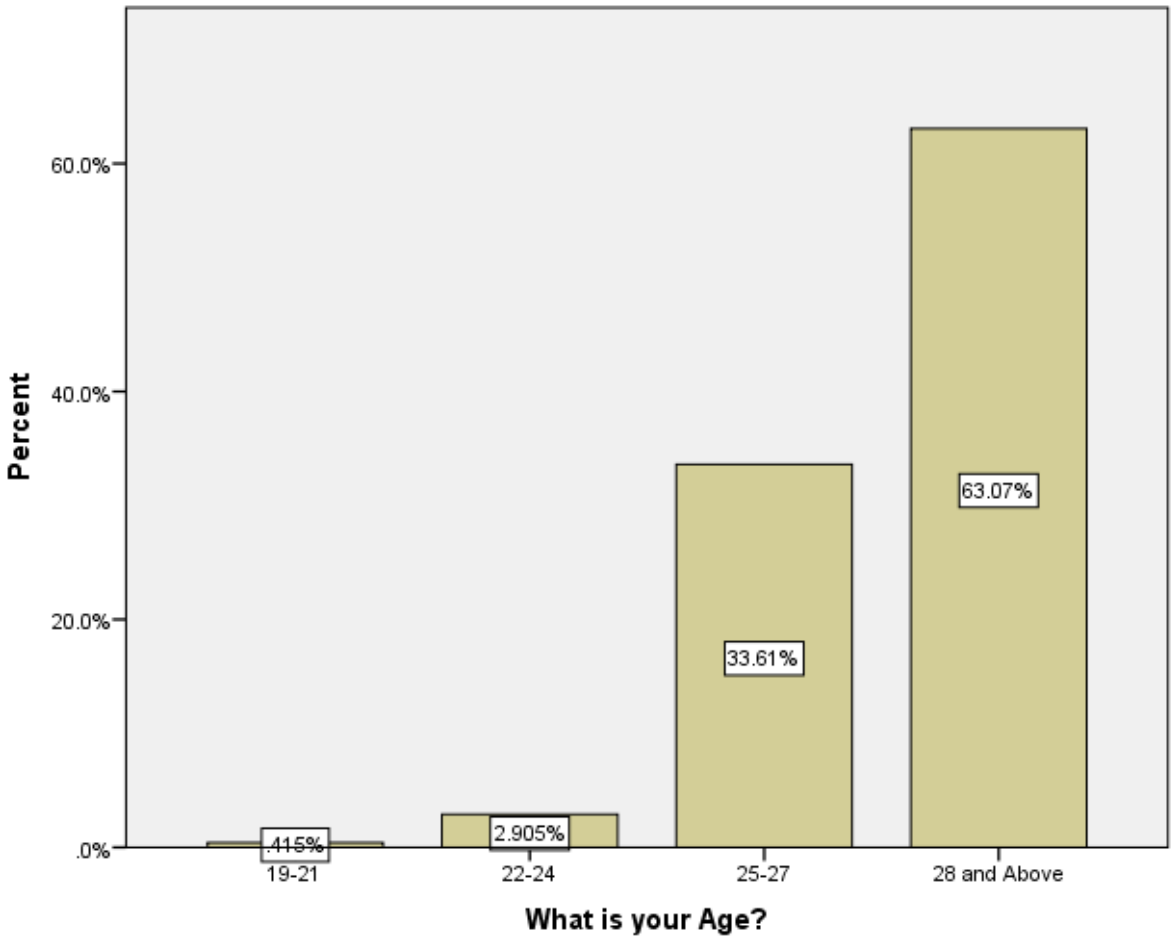
4.2.4 Distribution of Respondents regarding their Age

According to table number 4.6 displays that total number of respondents are 243,out of which 1 respondent is falling within the 19-21 age group, only 7 respondents are falling inside the 22-24 age group, 81 respondents are falling inside the 25-27 age group and 152 respondents are falling within the 28 and above age group. Majority of targeted investors are from 28 and above age group and least respondent are from 19-21 age group. Chart 4.4 shows that 19-21 age group respondents are 0.4 % out of total population, 22-24 age group are 2.9 %, 25-27 age group 33% and 28 and above age group respondents are around 63%.

Table 4.7: Age

		Frequency	Percent	Valid Percent	Cumulative Percent
	19-21	1	.4	.4	.4
	22-24	7	2.9	2.9	3.3
Valid	25-27	81	33.3	33.6	36.9
	28 and Above	152	62.6	63.1	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Figure No.4.4: Age



4.2.5 Distribution of respondents according to their Average Monthly Income?

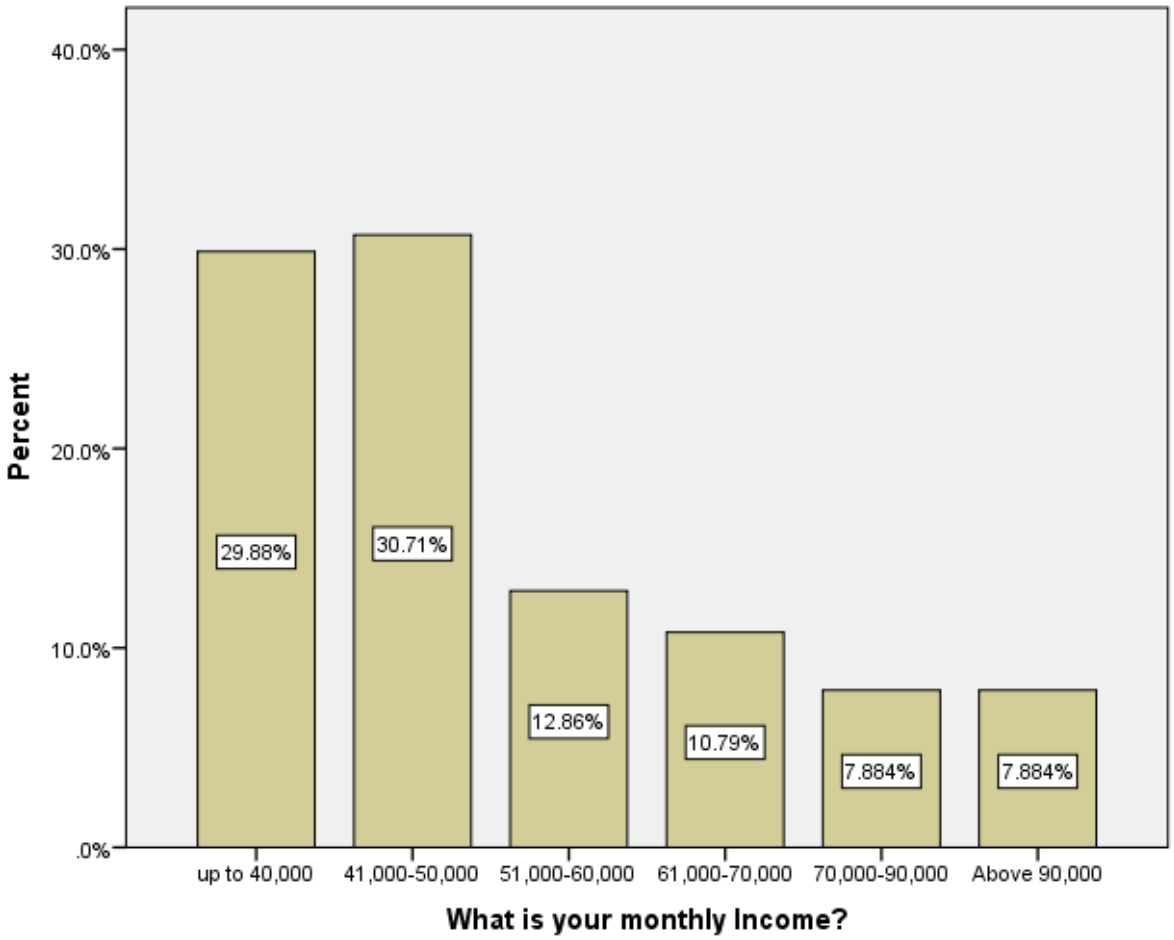
According to table number 4.7 defines the once-a-month income of the targeted investors, we divide monthly income of respondents in six segments. Total number of respondents are 243, where 72 responses out of total responses have once-a-month income in sort of Rs. up to 40,000, 74 respondents earned Rs.41,000-50,000, 31 respondents has Rs.51,000-60,000 and 26 respondents earned 61,000-70,000, 19 respondents earned 70,000-70,000 and 19 respondents earned more than Rs.90,000. Maximum number of respondents are falling in monthly income group of Rs.41,000-50,000. The chart 4.5 displays that most of the respondents belongs to monthly income group of Rs.41,000-50,000. Chart 4.5 also shows that's average monthly income of respondents up to 40,000 are around 30 % out of total respondents, average once-a-month income

of respondents in range of Rs 51,000-60,000 are around 31% and these two monthly income groups are the major contributor in the population.

Table 4.8: Monthly Income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	up to 40,000	72	29.6	29.9	29.9
	41,000-50,000	74	30.5	30.7	60.6
	51,000-60,000	31	12.8	12.9	73.4
	61,000-70,000	26	10.7	10.8	84.2
	70,000-90,000	19	7.8	7.9	92.1
	Above 90,000	19	7.8	7.9	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Figure No. 4.5: Monthly Income



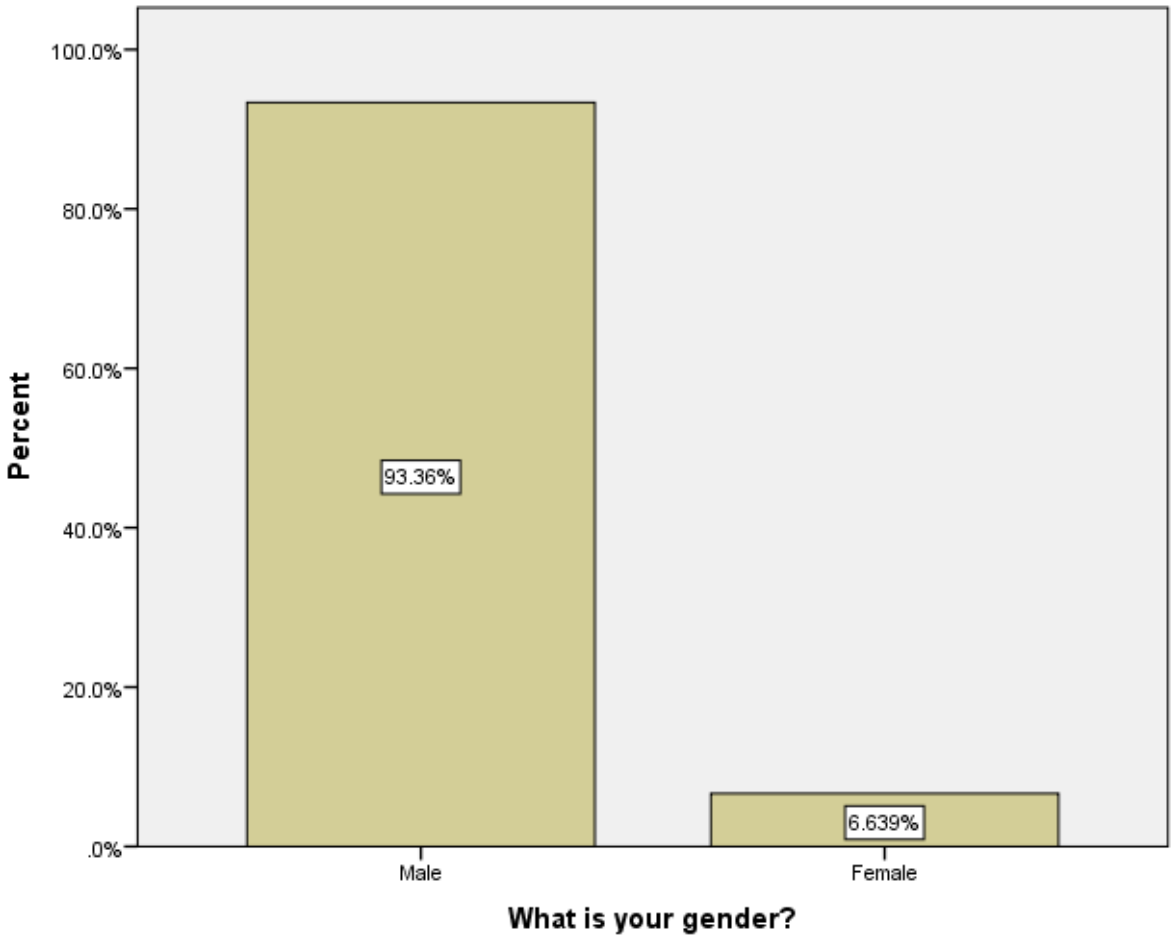
4.2.6 Distribution of Respondents regarding their Gender

Agreeing to table number 4.8 total number of responses are 243, male responses are 225 and shows 94 percent portion in the data. Female responses are 16 and 6 percent. Because male responses are overriding in the collected data we can say that male are more interested in stock sector.

Table 4.9: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	225	92.6	93.4	93.4
	Female	16	6.6	6.6	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Figure No. 4.6: Gender



4.2.7 Distribution of Respondents regarding their Marital Status

According to marital status table total number of responses are 243 farther than 140 responses are married and 101 responses are unmarried, 58 percent of whole responses are married and 42 percent are unmarried. Because married responses are leading we can say that married peoples are more interested in stock investing as shown in the chart 4.7.

Table 4.10: Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Married	140	57.6	58.1	58.1
	Unmarried	101	41.6	41.9	100.0
	Total	241	99.2	100.0	
Missing	System	2	.8		
Total		243	100.0		

Figure No. 4.7: Martial Status

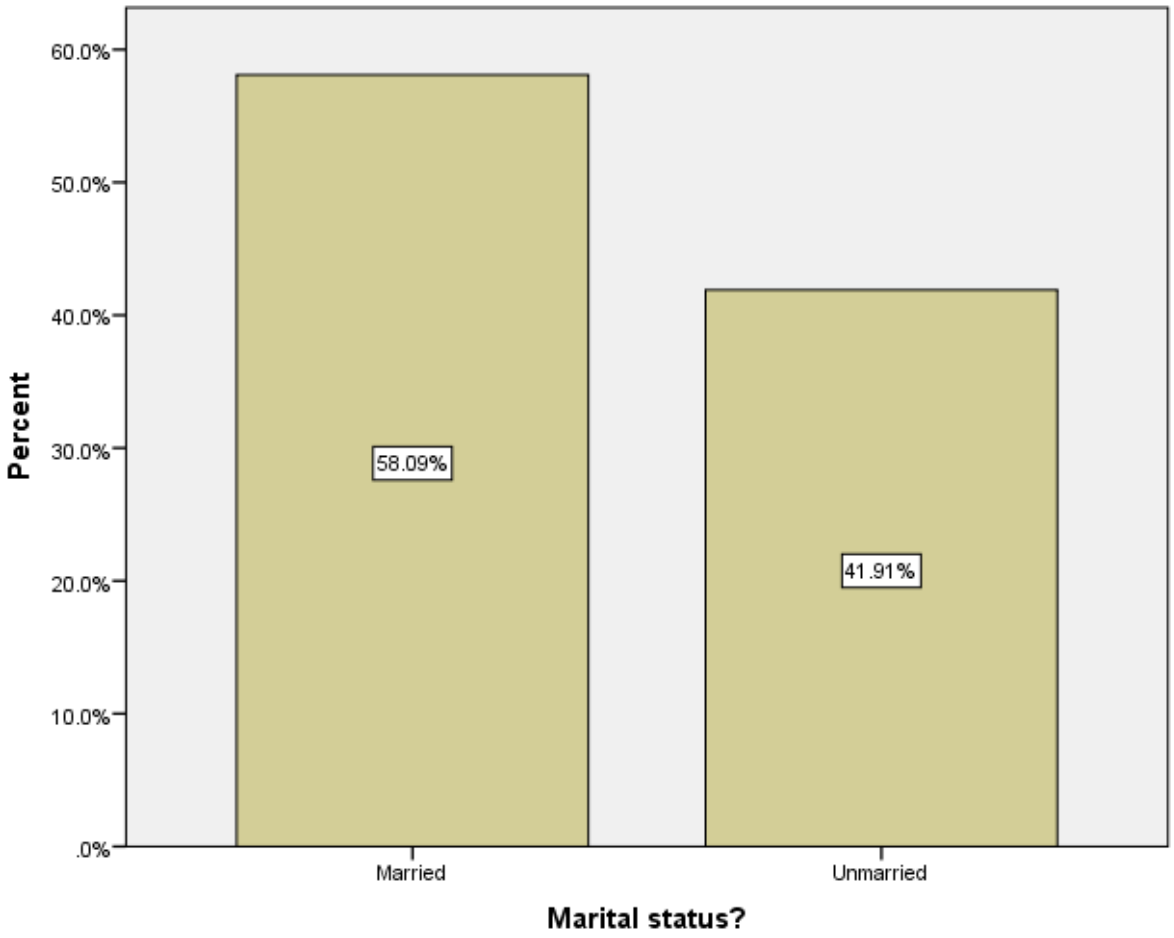


Figure No. 4.8

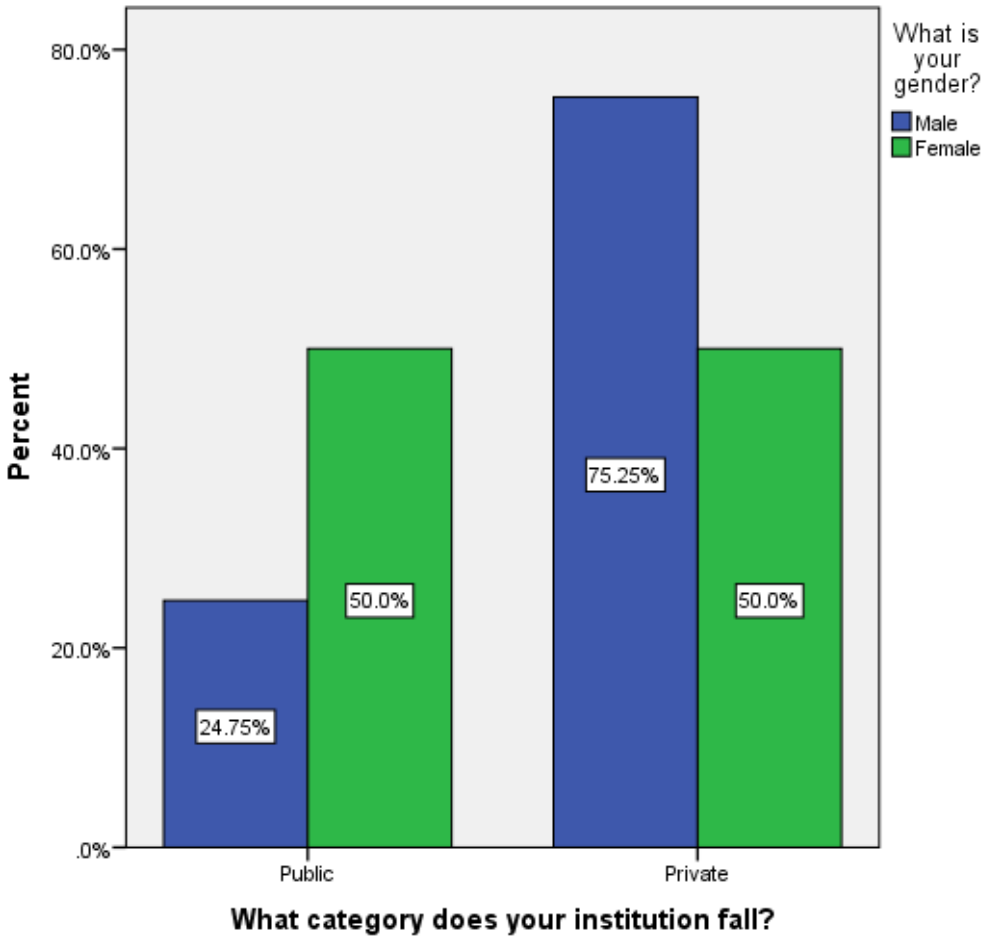


Chart 4.8 shows that male respondents are dominant in private sector and female respondents are dominant in public sector. In public sector 24.75% responses are male and 50.0% responses are female in public sector. In private sector 75.25% responses are male and 50.0 % are female responses.

4.3 Assumptions of Regression

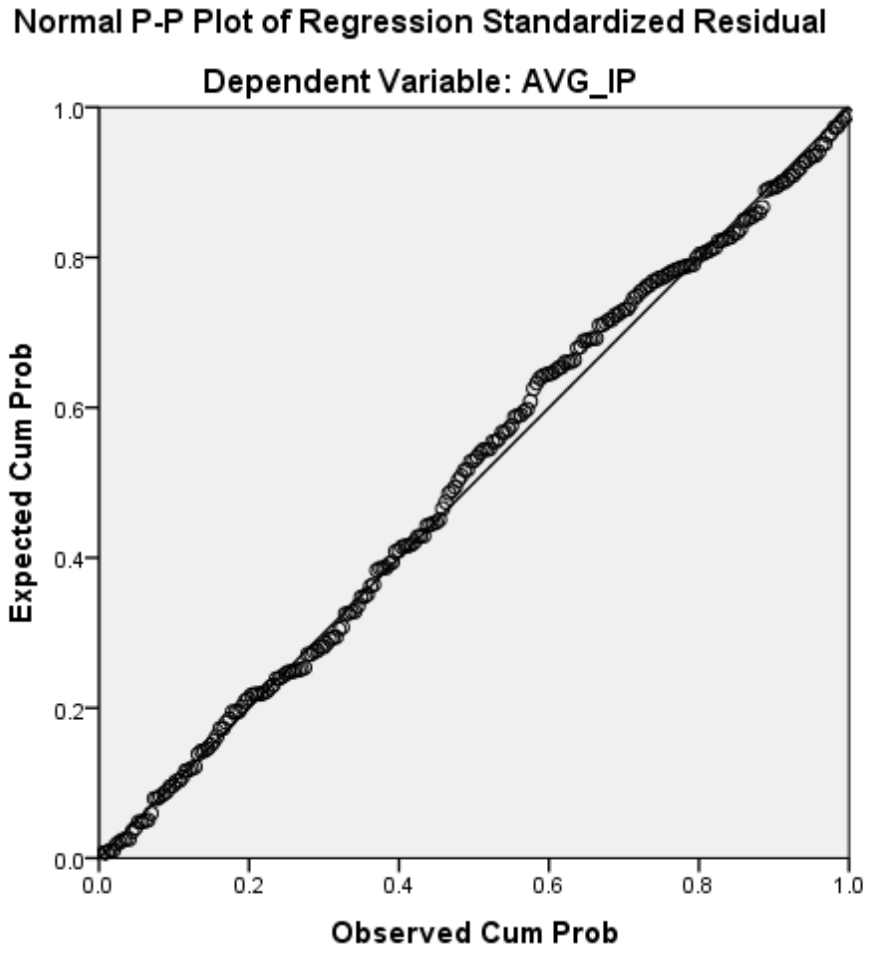


Figure No. 4.9

In this figure a diagonal line and a bunch of little circles. Ideally, plot looked like the two left most figures below. If the data is not normal, the little circles will not follow the normality line, such as in the figure to the left. Sometimes, there is a little bit of deviation, such as the figure all the way to the left. That is still ok; we can assume normality as long as there are no drastic deviations.

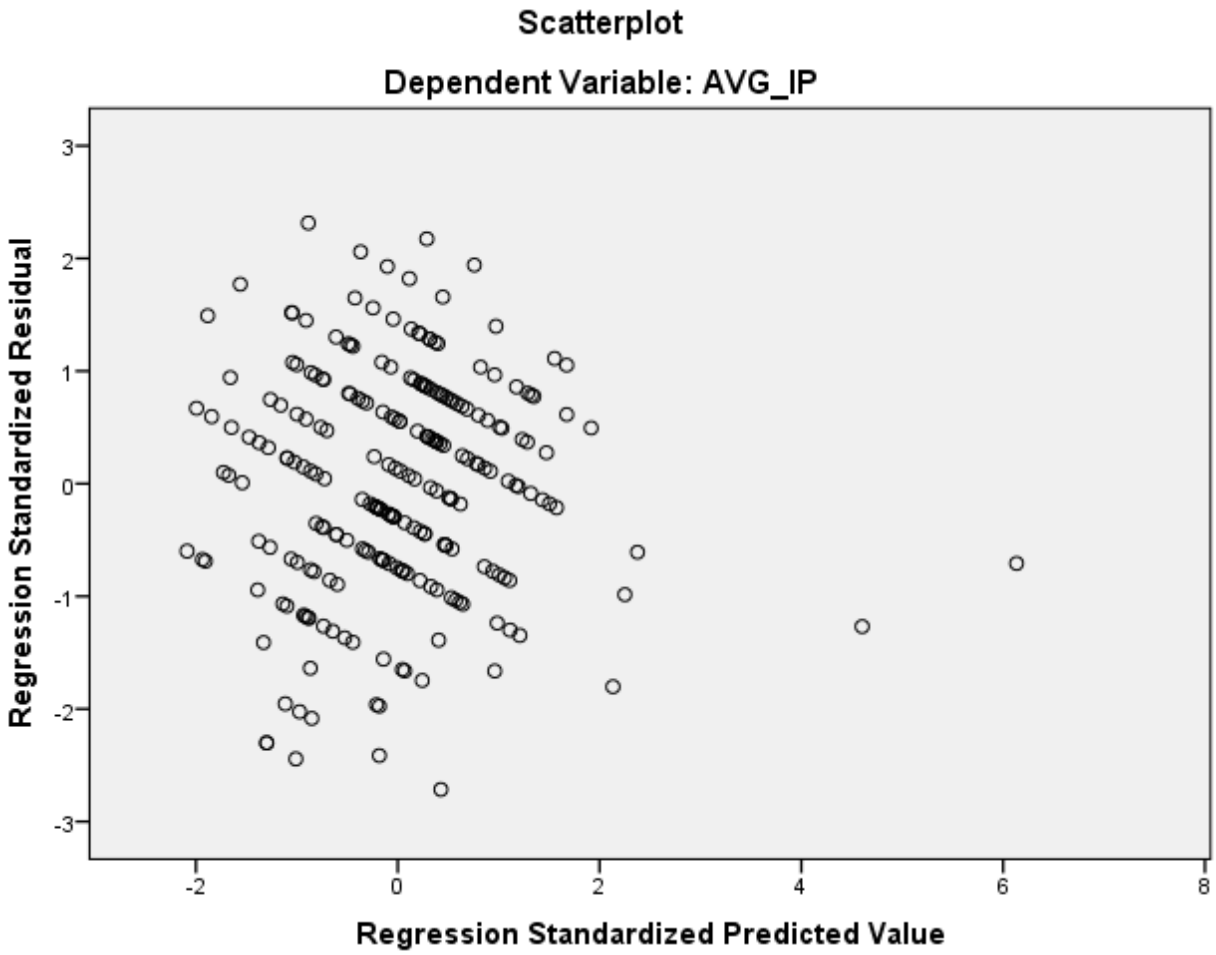


Figure No. 4.10

The second assumption of regression analysis is to check the homoscedasticity. The scatterplot of residuals appeared right above the normal P-P plot in this output. The data looks like you shot it out of a shotgun, it does not have an obvious pattern, there are points equally distributed above and below zero on the X axis, and to the left and right of zero on the Y axis.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.787	.269		6.642	.000		
	AVG_FRT	.112	.049	.184	2.278	.024	.530	1.888
	AVG_OOB	.046	.060	.053	.770	.442	.720	1.388
	AVG_RAB	.019	.068	.023	.273	.785	.509	1.963
	AVG_AB	.141	.067	.178	2.102	.037	.482	2.075
	AVG_HE	-.209	.064	-.256	-3.281	.001	.570	1.753
	AVG_REP	.298	.059	.326	5.074	.000	.839	1.192
	AVG_OCB	.031	.029	.067	1.070	.286	.896	1.116

a. Dependent Variable: AVG_IP

This table checked the absence of multicollinearity using VIF values. All the way at the right end of the table, you will find your VIF values. Each value is below 10, indicating that the assumption is met.

4.4 Pearson Correlation

Pearson correlation helps us to understand the relationships among variables (Positive correlation with other variable or negative correlation with other variable) and person correlation also shows us the significance of the variables. Positive value of correlation indicates that is first variable increases its value other will also change according to relative variable in a same direction. Negative correlation means that is first variable rises its value other will also change according to relative variable in an opposite direction.

Table No. 4.11: Pearson Correlations

		FRT	OOB	RAB	AB	HE	REP	OCB	IP
FRT	Pearson Correlation	1	.015	.230**	.023	.331**	.178**	-.025	.161*
	Sig. (2-tailed)		.816	.000	.727	.000	.005	.702	.012
	N	241	241	240	241	241	241	241	241
OOB	Pearson Correlation	.015	1	-.031	.195**	.115	.089	.111	.126
	Sig. (2-tailed)	.816		.632	.002	.075	.169	.087	.051
	N	241	241	240	241	241	241	241	241
RAB	Pearson Correlation	.230**	-.031	1	.018	.163*	.096	-.108	-.026
	Sig. (2-tailed)	.000	.632		.779	.011	.139	.096	.684
	N	240	240	240	240	240	240	240	240
AB	Pearson Correlation	.023	.195**	.018	1	.030	.184**	.030	.131*
	Sig. (2-tailed)	.727	.002	.779		.648	.004	.642	.043
	N	241	241	240	241	241	241	241	241
HE	Pearson Correlation	.331**	.115	.163*	.030	1	.265**	.133*	-.055
	Sig. (2-tailed)	.000	.075	.011	.648		.000	.040	.391
	N	241	241	240	241	241	241	241	241
REP	Pearson Correlation	.178**	.089	.096	.184**	.265**	1	-.024	.130*
	Sig. (2-tailed)	.005	.169	.139	.004	.000		.710	.043
	N	241	241	240	241	241	241	241	241
OCB	Pearson Correlation	-.025	.111	-.108	.030	.133*	-.024	1	.030
	Sig. (2-tailed)	.702	.087	.096	.642	.040	.710		.639

	N	241	241	240	241	241	241	241	241
	Pearson Correlation	.161*	.126	-.026	.131*	-.055	.130*	.030	1
IP	Sig. (2-tailed)	.012	.051	.684	.043	.391	.043	.639	
	N	241	241	240	241	241	241	241	241

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Where,

FRT = Financial Risk tolerance

OOB = Over Optimistic bias

RAB = Regret aversion bias

AB = Anchoring bias

HE = Herding bias

REP = Representativeness bias

OCB = Over confidence bias

IP = Investment performance

Correlation value among financial risk tolerance and over optimistic bias is 0.15, as the significant value is 0.816 which means there is no association among these two variables (financial risk tolerance and over optimistic bias). Correlation value among financial risk tolerance and regret aversion bias is 0.230 and the significant value is 0.000. Significant values indicates that there is a correlation among financial risk tolerance and regret aversion bias and positive value of correlation indicates that if a person takes higher level of risk also higher in regret aversion bias.

Correlation value among financial risk tolerance and anchoring bias is 0.023 and the significant value is 0.727. Significant values shows that there is no correlation among financial risk tolerance and anchoring bias. Correlation value among financial risk tolerance and herding bias is 0.331 and the sig-value is 0.000, caused by significance value there is a correlation among financial risk

tolerances and herding bias, positive value of Pearson correlation displays that if a person is high in financial risk tolerance is also high in herding bias.

Association value among financial risk tolerance and representativeness bias is 0.178 and having significant value shows that there is a correlation among these variables. Positive value of connection shows if a person is high in representativeness bias also high in financial risk tolerance.

Correlation value among financial risk tolerance and over confidence bias is -0.025. Significant value shows that there is no correlation among these variables. Pearson correlation in the middle of financial risk tolerance and investment performance is 0.161 and positive, significance value shows that there is a correlation among these variables and is a person is high in financial risk tolerance is also high in investment performance.

Over optimistic bias have no correlation with financial risk tolerance, regret aversion bias and representativeness bias caused by insignificance. Over optimistic bias have a correlation with anchoring bias, herding bias, over confidence bias and investment performance and the correlation value is positive that's shows if the value of over optimistic bias increase value of anchoring bias, herding bias, over confidence bias and investment performance also increases.

Regret aversion bias have no correlation with over optimistic bias, anchoring bias, representativeness bias and investment performance caused by insignificance. Regret aversion bias has a positive correlation with financial risk tolerance, herding bias and negative correlation with overconfidence bias. If a person is higher in regret aversion bias also higher in financial risk tolerance and herding bias, if a person is higher in overconfidence bias is lower in regret aversion bias because correlation among these two variable in negative or indirect.

There is no Correlation among anchoring bias and financial risk tolerance, regret aversion bias, herding bias and overconfidence bias because significance value is not less than 0.05. Regret aversion bias has a correlation among anchoring bias and over optimistic bias, representativeness bias and investment performance and relation is positive/direct among them. If a person is higher in anchoring bias is also higher in over optimistic bias, representativeness bias and investment performance.

There is a correlation among herding bias and financial risk tolerance, over optimistic bias, regret aversion bias, representativeness bias and overconfidence bias because the relation among them is

significant. Correlation among herding bias and other significant variables is positive because person correlation value is positive and direct that shows if a person is higher in herding is also higher in financial risk tolerance, over optimistic bias, regret aversion bias, representativeness bias and overconfidence bias.

There is a correlation among representativeness bias and financial risk tolerance, anchoring bias, herding bias and investment performance because relation among them is significant. Correlation among representativeness bias and financial risk tolerance, anchoring bias, herding bias and investment performance is direct because person correlation value is positive that shows if a person is higher in representativeness bias is also higher in financial risk tolerance, anchoring bias, herding bias and investment performance.

Overconfidence bias has positive correlation with over optimistic bias and herding bias because person correlation value is positive and indirect correlation with regret aversion bias because Pearson correlation value is negative and with remaining variable there is no correlation among overconfidence bias and them.

Last variable of Pearson correlation table is investment performance shows correlation with four variables. Correlation among investment performance and financial risk tolerance is positive and direct that shows if a person is higher in financial risk tolerance is also higher in investment performance. Investment performance also have a positive and direct correlation with over optimistic bias, anchoring bias and representativeness bias.

4.5 Hypothesis & Regression Analysis

In this exploration hypothesis were built with the assistance of predictor variable psychological biases, financial risk tolerance as intermediating variable, and investment performance as Predicted variable. Psychological biases includes overconfidence bias, representativeness bias, regret aversion bias, over optimistic bias, anchoring bias and herding bias. In this research regression analysis was used to analyze the impact of psychological biases and financial risk tolerance on perceived investment performance.

H1: There is an impact of Psychological biases (including all biases) on perceived investment performance of investors.

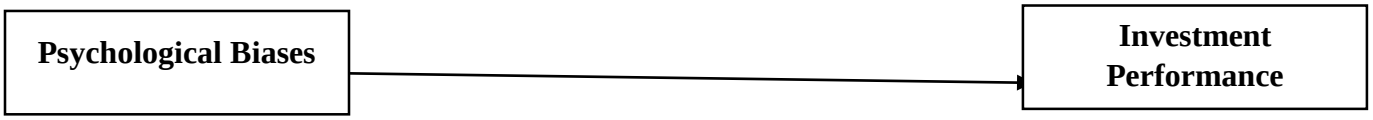


Table No. 4.12: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.103[a]	.011	.006	1.29578

a. Predictors: (Constant), PSY_AVG

Table No. 4.13: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.250	1	4.250	2.531	.113[b]
	Residual	399.614	238	1.679		
	Total	403.864	239			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), PSY_AVG

Table No. 4.14: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.909	.464		4.114	.000
	PSY_AVG	.242	.152	.103	1.591	.113

a. Dependent Variable: IP_AVG

The model summary table number 4.12 of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using psychological biases as predictor variable and investment performance as Predicted variable. Rate of R square shows us the involvement of predictor variable in Predicted variable. In current scenario rate of R square is 0.011 that's shows 1.1 % variation is represented by psychological biases in investment performance and remaining variation in investment performance is caused by the other elements which are not included in the model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables displays the fitness of the complete model. The ANOVA table displays that there are 4.250 points of variation by psychological biases on investment performance. Total number of points of variation in Predicted variable is 403.864 and un-explained number of points are 399.614 means variation of these points caused by other variables which are not included in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which are not used in this research.

The coefficients table support us to recognize the relation among predictor variable and Predicted variable as well as the route of the relationship (Positive or negative). Table number 4.14 displays that there is no relation among psychological biases and investment performance because significance value is not less than 0.05.

$$EC = \alpha + \beta_1(Psychological\ biases)$$

$$EC = 1.909 + 0.242(Psychological\ biases)$$

H2: There is an impact of psychological biases on perceived investment performance with mediating effect of financial risk tolerance.

Mediation Step-1

Table No. 4.15: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.103[a]	.011	.006	1.29578

a. Predictors: (Constant), PSY_AVG

Table No. 4.16: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.250	1	4.250	2.531	.113[b]
	Residual	399.614	238	1.679		
	Total	403.864	239			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), PSY_AVG

Table No. 4.17: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.909	.464		4.114	.000
	PSY_AVG	.242	.152	.103	1.591	.113

a. Dependent Variable: IP_AVG

The model summary table number 4.15 of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using psychological biases as predictor variable and investment performance as Predicted variable. Rate of R square shows us the involvement of predictor variable in Predicted variable. In current scenario rate of R square is 0.011 that's shows 1.1 % variation is represented by psychological biases in investment performance and remaining variation in investment performance is caused by the other elements which are not included in the model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables displays the fitness of the complete model. The ANOVA table displays that there are 4.250 points of variation by psychological biases on investment performance. Total number of points of variation in Predicted variable is 403.864 and un-explained number of points are 399.614 means variation of these points caused by other variables which are not included in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which are not used in this research.

The coefficients table support us to recognize the relation among predictor variable and Predicted variable as well as the route of the relationship (Positive or negative). Table number 4.17 displays that there is no relation among psychological biases and investment performance because significance value is not less than 0.05.

$$EC = \alpha + \beta_1(Psychological\ biases)$$

$$EC = 1.909 + 0.242(Psychological\ biases)$$

Mediation Step-2

Table No. 4.18: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.280[a]	.078	.074	1.29980

a. Predictors: (Constant), PSY_AVG

Table No. 4.19: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	34.171	1	34.171	20.226	.000[b]
	Residual	402.098	238	1.689		
	Total	436.269	239			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), PSY_AVG

Table No. 4.20: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.798	.465		1.714	.088
	PSY_AVG	.686	.153	.280	4.497	.000

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using psychological biases as predictor variable and financial risk tolerance as Predicted variable. Rate of R square shows us the influence of predictor variable in Predicted variable. In current scenario rate of R square is 0.078 that's shows 7.8% variation is represented by psychological biases in financial risk tolerance and remaining variation in financial risk tolerance is caused by the other elements which are not involved in the model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table displays that there are 34.171points of variation by psychological biases on financial risk tolerance. Total number of points of variation in Predicted variable is 436.269 and un-explained number of points are 402.098 means variation of these points caused by other variables which are not involved in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by predictor variables used in the study.

The coefficients table help us to recognize the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table number 4.20 shows that psychological biases have positive and direct relation with financial risk tolerance for the reason that significance value is less than 0.05.

$$EC = \alpha + \beta_1(Psychological\ biases)$$

$$EC = 0.798 + 0.686(Psychological\ biases)$$

Mediation Step-3

Table No. 4.21: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	.026	.022	1.28720

a. Predictors: (Constant), FRT_AVG

Table No.4.22: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.532	1	10.532	6.357	.012[b]
	Residual	395.994	239	1.657		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

Predictors: (Constant), FRT_AVG

Table No.4.23: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.187	.194		11.300	.000
	FRT_AVG	.155	.061	.161	2.521	.012

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.026 that's shows 2.6% variation is represented by financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not included in the model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables displays the fitness of the complete model. The ANOVA table shows that there are 10.532 points of variation by financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 395.994 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by predictor variables used in the study

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table number 4.23 shows that financial risk tolerance and investment performance have a positive and direction relation because significance value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta_1(Financial\ risk\ tolerance)$$

$$EC = 2.187 + 0.155(Financial\ risk\ tolerance)$$

Mediation Step-4

Table No.4.24: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.167[a]	.028	.020	1.28712

a. Predictors: (Constant), PSY_AVG, FRT_AVG

Table No.4.25: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.230	2	5.615	3.389	.035[b]
	Residual	392.634	237	1.657		
	Total	403.864	239			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), PSY_AVG, FRT_AVG

Table No.4.26: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.804	.464		3.889	.000
	FRT_AVG	.132	.064	.137	2.053	.041
	PSY_AVG	.152	.157	.064	.963	.336

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using psychological biases and financial risk tolerance as predictor variables and investment performance as Predicted variable. Value of R square shows us the contribution of predictor variable in Predicted variable. In current scenario value of R square is 0.028 that's shows 2.8% variation is represented by psychological biases and financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not contained within in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table number 4.25 shows that there are 11.230 points of variation by psychological biases and financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 403.864 and un-explained number of points are 392.634 means variation of these points caused by other variables which are not included in the study. Significance value is less than 0.05 shows that variation in Predicted variable is caused by predictor variables used in the study.

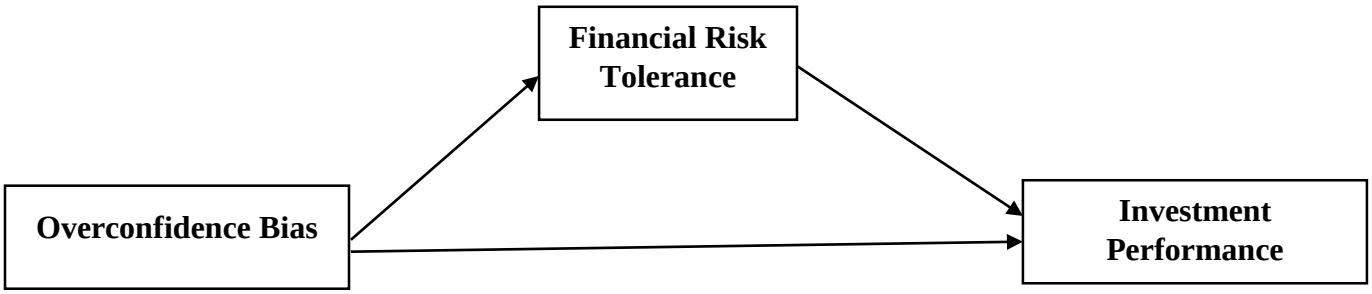
The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative).Table number 4.26 shows that financial risk tolerance has a direct relation with investment performance because significance value is less than 0.05 and beta value is positive. Relation among psychological biases and investment performance is insignificance because significance value is not less than 0.05.

$$EC = \alpha + \beta_1(Psychological\ biases) + \beta_2(Financial\ risk\ tolerance)$$

$$EC = 1.804 + 0.152(Psychological\ biases) + 0.132(Financial\ risk\ tolerance)$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.113
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.000
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	M = 0.012
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	X = 0.336 M = 0.041

H2a: There is an impact of Overconfidence bias on perceived investment performance with mediating effect of financial risk tolerance.



Mediation Step-1

Table No. 4.27: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.030[a]	.001	-.003	1.30360

a. Predictors: (Constant), OCB_AVG

Table No. 4.28: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.376	1	.376	.221	.639[b]
	Residual	406.150	239	1.699		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), OCB_AVG

Table No.4.29: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.516	.253		9.937	.000
	OCB_AVG	.038	.081	.030	.470	.639

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using overconfidence bias as predictor variable and investment performance as Predicted variable. Value of R square shows us the contribution of predictor variable in Predicted variable. In current scenario value of R square is 0.001 that's shows 0.1% variation is represented by overconfidence bias in investment performance and remaining variation in investment performance is caused by the other elements which are not involved in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 0.376 points of variation by overconfidence bias on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 406.150 means variation of these points caused by other variables which are not included in the study. Significance rate is not lower than 0.05 shows that variation in Predicted variable is caused by other variables that's are not used in the study.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). The results exposed in table 4.36 indicates that overconfidence bias is insignificant having sig-value not lower than 0.05, where β value of overconfidence bias is positive but caused by insignificant value there is no relation with investment performance of individual investors and regression equation for this research model calculates the functions as

$$EC = \alpha + \beta(\text{Over confidence bias})$$

$$EC = 2.516 + 0.038(\text{Over confidence bias})$$

Mediation Step-2

Table No.4.30: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.025[a]	.001	-.004	1.35596

a. Predictors: (Constant), OCB_AVG

Table No.4.31: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.270	1	.270	.147	.702[b]
	Residual	439.432	239	1.839		
	Total	439.702	240			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), OCB_AVG

Table No.4.32: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.944	.263		11.181	.000
	OCB_AVG	-.032	.084	-.025	-.383	.702

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using overconfidence bias as predictor variable and financial risk tolerance as Predicted variable. Rate of R square shows us the involvement of predictor variable in Predicted variable. In current scenario value of R square is 0.001 that's shows 0.1% variation is represented by overconfidence bias in financial risk tolerance and remaining variation in financial risk tolerance is caused by the other elements which are not involved in the model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance

value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 0.270 points of variation by overconfidence bias on financial risk tolerance. Total number of points of variation in Predicted variable is 439.702 and un-explained number of points are 439.432 means variation of these points caused by other variables which are not involved in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which were not used in the research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). The coefficients table number 4.39 indicates that over confidence bias is insignificant because sig-value is not lower than 0.05, where β value of overconfidence bias is positive but caused by insignificance of overconfidence bias there is no relations with financial risk tolerance (FRT) and regression equation of this research models estimates the function as

$$EC = \alpha + \beta(\text{Over confidence bias})$$

$$EC = 2.944 - 0.032(\text{Over confidence bias})$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.639
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.702
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	Not Performed
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	Not Performed

H2b: There is an impact of Over Optimistic bias on perceived investment performance with mediating effect of financial risk tolerance.

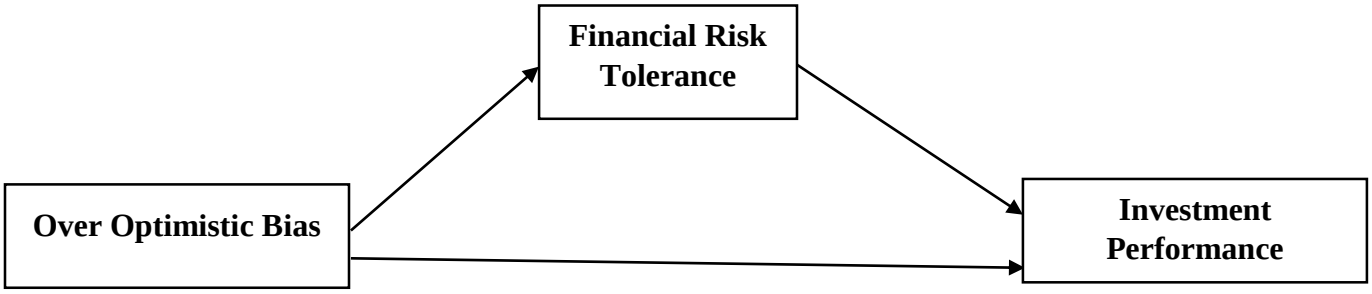


Table No. 4.33: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.126[a]	.016	.012	1.29387

a. Predictors: (Constant), OOB_AVG

Table No. 4.34: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.414	1	6.414	3.832	.051[b]
	Residual	400.111	239	1.674		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), OOB_AVG

Table No. 4.35: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.015	.324		6.220	.000
	OOB_AVG	.189	.097	.126	1.957	.051

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using over optimistic bias as predictor variable and investment performance as Predicted variable. Value of R square shows us the contribution of predictor variable in Predicted variable. In current scenario value of R square is 0.016 that's shows 1.6% variation is represented by over optimistic bias in investment performance and remaining variation in investment performance is caused by the other elements which are not involved in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 6.414 points of variation by over optimistic bias on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 400.414 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the route of the relationship (Positive or negative). Results presented in table indicates that over optimistic bias is significant because sig-value is lower than 0.05 and beta rate of over optimistic bias is positive, this shows that relations with investment performance of individual investors. Regression equation of this research model calculated as

$$EC = \alpha + \beta(\text{over optimistic bias})$$

$$EC = 2.015 + 0.189(\text{over optimistic bias})$$

Mediation Step-2

Table No.4.36: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.015[a]	.000	-.004	1.35622

a. Predictors: (Constant), OOB_AVG

Table No.4.37: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.100	1	.100	.054	.816[b]
	Residual	439.602	239	1.839		
	Total	439.702	240			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), OOB_AVG

Table No.4.38: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.772	.340		8.164	.000
	OOB_AVG	.024	.101	.015	.233	.816

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using over optimistic bias as predictor variable and financial risk tolerance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.00 that's shows 0.0% variation is represented by over optimistic bias n financial risk tolerance and remaining variation in financial risk tolerance is caused by the other factors which are not included in the model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 0.100 points of variation by over optimistic bias on financial risk tolerance. Total number of points of variation in Predicted variable is 439.702 and un-explained number of points are 439.602 means variation of these points caused by other variables which are not included in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which were not used in the research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative), coefficients table shows that over optimistic bias is insignificant because sig-value is not less than 0.05, where β value of over optimistic bias is positive, caused by insignificance of over optimistic bias here is no relation among over optimistic bias and financial risk tolerance, regression equation of this research model calculated as

$$EC = \alpha + \beta(\text{Over optimistic bias})$$

$$EC = 2.772 + 0.024(\text{Over optimistic bias})$$

Mediation Step-3

Table No.4.39: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	.026	.022	1.28720

a. Predictors: (Constant), FRT_AVG

Table No.4.40: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.532	1	10.532	6.357	.012[b]
	Residual	395.994	239	1.657		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), FRT_AVG

Table No.4.41: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.187	.194		11.300	.000
	FRT_AVG	.155	.061	.161	2.521	.012

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.026 that's shows 2.6% variation is represented by financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not involved in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 10.532 points of variation by financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 395.994 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table number 4.41 shows that financial risk tolerance is significant because sig-value is less than 0.05, where beta rate of

financial risk tolerance is also positive. Positive rate of beta shows direct relations among financial risk tolerance and investment performance of individual investors.

$$EC = \alpha + \beta(\text{financial risk tolerance})$$

$$EC = 2.897 + 0.155(\text{financial risk tolerance})$$

Mediation Step-4

Table No.4:42: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.203[a]	.041	.033	1.27981

a. Predictors: (Constant), OOB_AVG, FRT_AVG

Table No.4.43: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.702	2	8.351	5.099	.007[b]
	Residual	389.823	238	1.638		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), OOB_AVG, FRT_AVG

Table No.4.44: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.591	.362		4.390	.000
	FRT_AVG	.153	.061	.159	2.506	.013
	OOB_AVG	.186	.096	.123	1.941	.053

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using over optimistic bias and financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.041 that's shows 4.1% variation is represented by over optimistic bias and financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not involved in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 16.702 points of variation by over optimistic bias and financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 389.823 means variation of these points caused by additional variables which are not involved in the study. Significance value is less than 0.05 displays that variation in Predicted variable is caused by predictor variables used in the study.

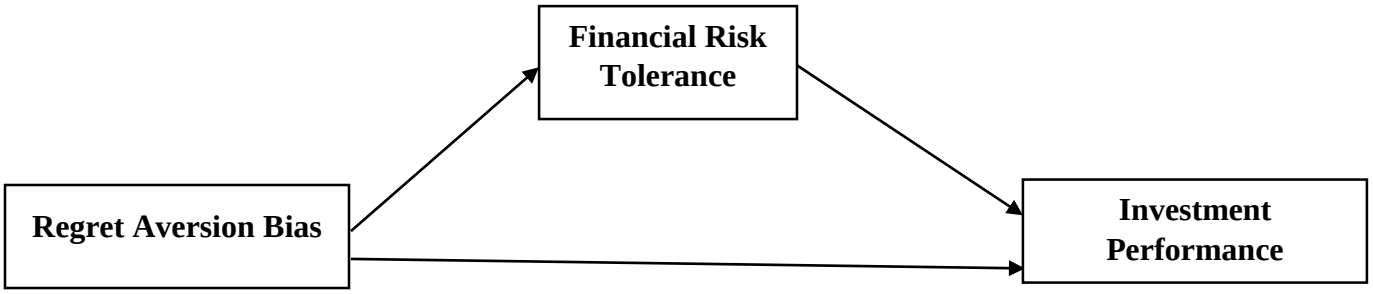
The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that relation among financial risk tolerance and investment performance is significant and direct because significance value is less than 0.05 and beta value is positive. Over optimistic bias relation with investment performance is also direct and significance because significance value is less than 0.10 and beta value is positive.

$$EC = \alpha + \beta_1(Over\ optimistic\ bias) + \beta_2(Financial\ risk\ tolerance)$$

$$EC = 1.591 + 0.186(Over\ optimistic\ bias) + 0.153(Financial\ risk\ tolerance)$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.051
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.0816
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	M = 0.012
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	X = 0.053 M = 0.013

H2c: There is an impact of Regret Aversion bias on perceived investment performance with mediating effect of financial risk tolerance.



Mediation Step-1

Table No.45: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.026[a]	.001	-.004	1.30220

a. Predictors: (Constant), RAB_AVG

Table No. 46: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.281	1	.281	.166	.684[b]
	Residual	403.584	238	1.696		
	Total	403.864	239			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), RAB_AVG

Table No. 4.47: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.721	.228		11.923	.000
	RAB_AVG	-.027	.067	-.026	-.407	.684

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using regret aversion bias as predictor variable and investment performance as Predicted variable. Value of R square shows us the contribution of predictor variable in Predicted variable. In current scenario value of R square is 0.001 that's shows 0.1% variation is represented by regret aversion bias in investment performance and remaining variation in investment performance is caused by the other elements which are not involved in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 0.281 points of variation by regret aversion bias on investment performance. Total number of points of variation in Predicted variable is 403.864 and un-explained number of points are 403.854 means variation of these points caused by other variables which are not included in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which were not used in the research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Coefficients table displays that there is no relation among regret aversion bias and investment performance because significant value is not less than 0.05.

$$EC = \alpha + \beta(\text{Regret aversion bias})$$

$$EC = 2.721 - 0.027(\text{Regret aversion bias})$$

Mediation Step-2

Table No.4.48: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.230[a]	.053	.049	1.31765

a. Predictors: (Constant), RAB_AVG

Table No.4.49: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.051	1	23.051	13.277	.000[b]
	Residual	413.218	238	1.736		
	Total	436.269	239			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), RAB_AVG

Table No.4.50: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.074	.231		8.983	.000
	RAB_AVG	.247	.068	.230	3.644	.000

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using regret aversion bias as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.053 that's shows 5.3% variation is represented by regret aversion bias in investment performance and remaining variation in investment performance is caused by the other factors which are not included in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 23.051 points of variation by regret aversion bias on investment performance. Total number of points of variation in Predicted variable is 436.269 and un-explained number of points are 413.218, means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that regret aversion bias has a positive and direct relation with financial risk tolerance because significance value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta(\text{Regret aversion bias})$$

$$EC = 2.074 + 0.247(\text{Regret aversion bias})$$

Mediation Step-3

Table No.4.51: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	.026	.022	1.28720

a. Predictors: (Constant), FRT_AVG

Table No.4.52: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10.532	1	10.532	6.357	.012[b]
	Residual	395.994	239	1.657		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), FRT_AVG

Table No.4.53: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.187	.194		11.300	.000
	FRT_AVG	.155	.061	.161	2.521	.012

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.026 that's shows 2.6% variation is represented by financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not involved in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 10.532points of variation by financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 395.994, means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that financial risk tolerance has a positive and direct relation with investment performance because significance value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta(\text{Financial risk tolerance})$$

$$EC = 2.187 + 0.155(\text{Financial risk tolerance})$$

Mediation Step-4

Table No.4.54: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.167[a]	.028	.020	1.28696

a. Predictors: (Constant), RAB_AVG, FRT_AVG

Table No.4.55: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.331	2	5.665	3.421	.034[b]
	Residual	392.534	237	1.656		
	Total	403.864	239			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), RAB_AVG, FRT_AVG

Table No.4.56: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.382	.261		9.126	.000
	FRT_AVG	.164	.063	.170	2.583	.010
	RAB_AVG	-.068	.068	-.065	-.994	.321

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using regret aversion bias and financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.028 that's shows 2.8% variation is represented by regret aversion bias and financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not included in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 11.331 points of variation by regret aversion bias and financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 403.864 and un-explained number of points are 392.534, means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

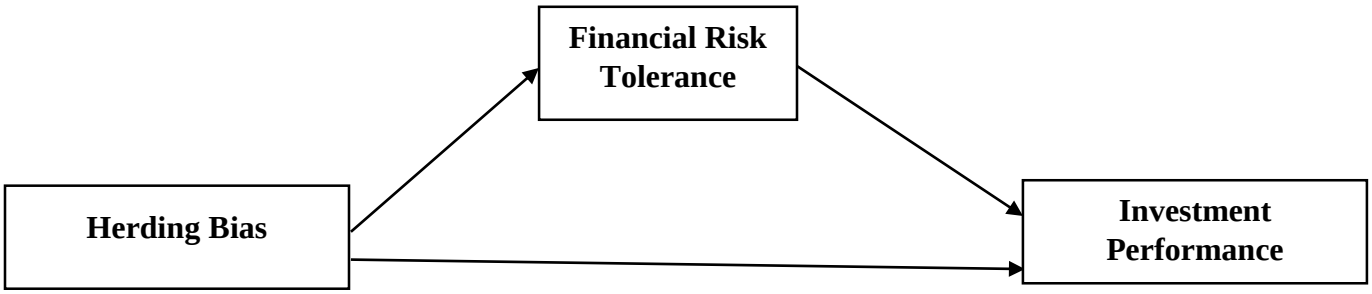
The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that regret aversion bias has no relation with investment performance because significance value is not less than 0.05. Financial risk tolerance has positive and direct relation with investment performance because significant value is lower than 0.05 and value of beta is positive.

$$EC = \alpha + \beta_1(Regret\ aversion\ bias) + \beta_2(Financial\ risk\ tolerance)$$

$$EC = 2.382 - 0.068(Regret\ aversion\ bias) + 0.164(Financial\ risk\ tolerance)$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.684
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.000
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	M = 0.012
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	X = 0.321 M = 0.000

H2d: There is an impact of Herding bias on perceived investment performance with mediating effect of financial risk tolerance.



Mediation Step-1

Table No. 4.57: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.055[a]	.003	-.001	1.30220

a. Predictors: (Constant), HE_AVG

Table No. 4.58: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.250	1	1.250	.737	.391[b]
	Residual	405.276	239	1.696		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), HE_AVG

Table No. 4.59: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.801	.218		12.850	.000
	HE_AVG	-.059	.069	-.055	-.859	.391

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using herding bias as predictor variable and investment performance as Predicted variable. Rate of R square shows us the involvement of predictor variable in Predicted variable. In current scenario rate of R square is 0.003 that's shows 0.3% variation is represented by herding bias in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that

there are 1.250 points of variation by herding bias on investment performance. Total number of points of variation in Predicted variable is 405.276 and un-explained number of points are 406.526, means variation of these points caused by other variables which are not included in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which were not used in the research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table demonstrates that there is no relation among herding bias and investment performance because significant value is not less than 0.05.

$$EC = \alpha + \beta(\text{Herding bias})$$

$$EC = 2.801 - 0.059(\text{Herding bias})$$

Mediation Step-2

Table No.4.60: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.331[a]	.110	.106	1.27976

a. Predictors: (Constant), HE_AVG

Table No.4.61: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	48.269	1	48.269	29.472	.000[b]
	Residual	391.433	239	1.638		
	Total	439.702	240			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), HE_AVG

Table No.4.62: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.776	.214		8.290	.000
	HE_AVG	.367	.068	.331	5.429	.000

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using herding bias as predictor variable and financial risk tolerance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.110 that's shows 11% variation is represented by herding bias in financial risk tolerance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance

value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 48.269 points of variation by herding bias on financial risk tolerance. Total number of points of variation in Predicted variable is 439.702 and un-explained number of points are 391.433 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). According to table herding bias has a positive and direct relation with financial risk tolerance because significant value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta(\text{Herding bias})$$

$$EC = 1.776 + 0.367(\text{Herding bias})$$

Mediation Step-3

Table No.4.63: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	.026	.022	1.28720

a. Predictors: (Constant), FRT_AVG

Table No.4.64: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.532	1	10.532	6.357	.012[b]
	Residual	395.994	239	1.657		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), FRT_AVG

Table No.4.65: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.187	.194		11.300	.000
	FRT_AVG	.155	.061	.161	2.521	.012

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.026 that's shows 2.6% variation is represented by financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that

there are 10.532 points of variation by financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 395.994 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table demonstrates that financial risk tolerance has a positive and direct relation with investment performance because significance value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta(\text{Financial risk tolerance})$$

$$EC = 2.187 + 0.155(\text{Financial risk tolerance})$$

Mediation Step-4

Table No.4.66: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.198[a]	.039	.031	1.28107

a. Predictors: (Constant), HE_AVG, FRT_AVG

Table No.4.67: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.935	2	7.968	4.855	.009[b]
	Residual	390.590	238	1.641		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), HE_AVG, FRT_AVG

Table No.4.68: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.457	.243		10.098	.000
	FRT_AVG	.194	.065	.201	2.991	.003
	HE_AVG	-.130	.072	-.122	-1.815	.071

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using herding bias and financial risk tolerance as predictor variables and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.039 that's shows 3.9% variation is represented by herding bias and financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 15.935 points of variation by herding bias and financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 390.590 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

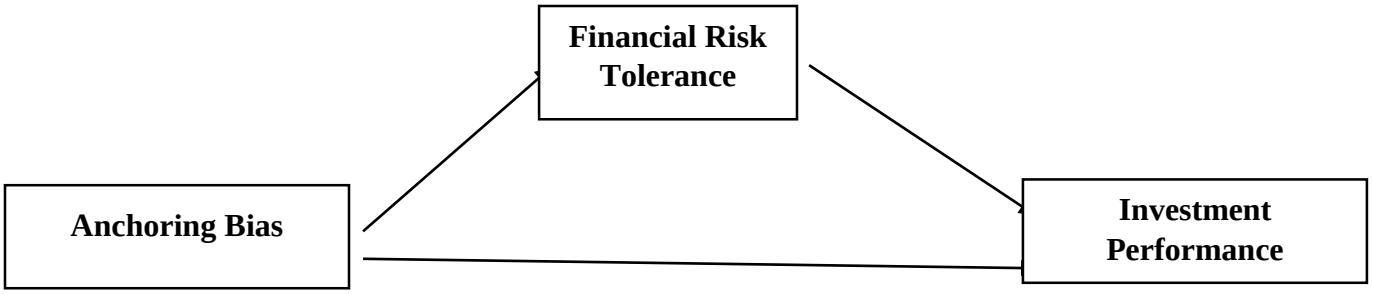
The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that financial risk tolerance has a positive and direct relation with investment performance because significance value is less than 0.05 and value of beta is positive. Herding bias also have a relation with investment performance because significant value is less than 0.10 but relation among them is in-direct because value of beta is negative.

$$EC = \alpha + \beta_1(Herding\ bias) + \beta_2(Financial\ risk\ tolerance)$$

$$EC = 2.457 - 0.130(Herding\ bias) + 0.194(Financial\ risk\ tolerance)$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.391
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.000
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	M = 0.012
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	X = 0.071 M = 0.030

H2e: There is an impact of Anchoring bias on perceived investment performance with mediating effect of financial risk tolerance.



Mediation Step-1

Table No.4.69: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.131[a]	.017	.013	1.29303

a. Predictors: (Constant), AB_AVG

Table No.4.70: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.936	1	6.936	4.149	.043[b]
	Residual	399.590	239	1.672		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), AB_AVG

Table No.4.71: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.159	.245		8.822	.000
	AB_AVG	.156	.077	.131	2.037	.043

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using anchoring bias as predictor variable and investment performance as Predicted variable. Value of R square shows us the contribution of predictor variable in Predicted variable. In current scenario value of R square is 0.017 that's shows 1.7% variation is represented by anchoring bias in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 6.936 points of variation by herding bias on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 399.590 means variation of these points caused by other variables which are not included in the study. Significance value is less than 0.05 shows that variation in Predicted variable is caused by predictor variables used in the study.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table demonstrates that herding has a positive and direct relation with investment performance because significance value is less than 0.05 and value of beta is positive, if a person is higher in anchoring bias also higher in investment performance.

$$EC = \alpha + \beta(\text{Anchoring bias})$$

$$EC = 2.159 + 0.156(\text{Anchoring bias})$$

Mediation Step-2

Table No.4.72: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.023[a]	.001	-.004	1.35603

a. Predictors: (Constant), AB_AVG

Table No.4.73: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.225	1	.225	.122	.727[b]
	Residual	439.478	239	1.839		
	Total	439.702	240			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), AB_AVG

Table No.4.74: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.765	.257		10.771	.000
	AB_AVG	.028	.080	.023	.350	.727

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using anchoring bias as predictor variable and financial risk tolerance as Predicted variable. Rate of R square shows us the role of predictor variable in Predicted variable. In current scenario rate of R square is 0.001 that's shows 0.1% variation is represented by anchoring bias in financial risk tolerance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 0.225 points of variation by anchoring bias on financial risk tolerance. Total number of points of variation in Predicted variable is 439.702 and un-explained number of points are 439.478 means variation of these points caused by other variables which are not included in the study. Significance value is not lower than 0.05 indicates that changes in Predicted variable is caused by other elements which were not used in the research model.

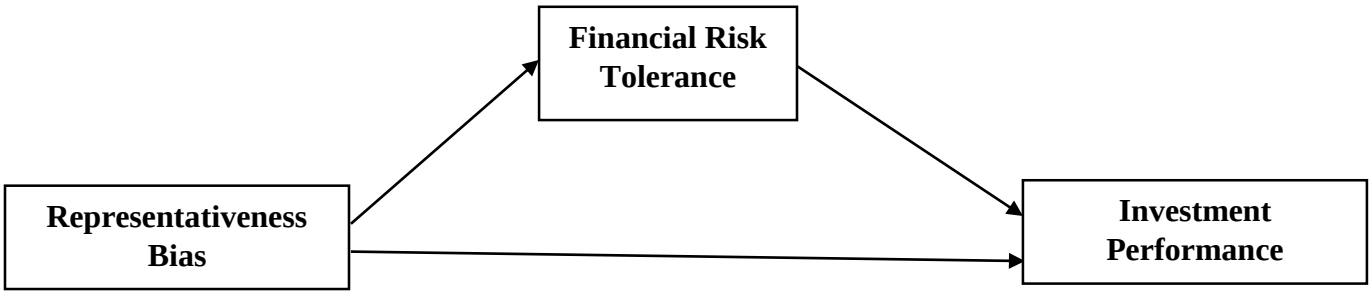
The results disclosed in table indicates that anchoring bias is insignificant having sig-value not less than 0.05, whereas β value of anchoring bias is positive, caused by insignificance of anchoring bias no relations with financial risk tolerance of individual investors. The regression equation in this research estimates the function as

$$EC = \alpha + \beta(\text{Anchoring bias})$$

$$EC = 2.765 + 0.028(\text{Anchoring bias})$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.000
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.000
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	M = 0.000
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	X = 0.017 M = 0.000

H2f: There is an impact of Representativeness bias on perceived investment performance with mediating effect of financial risk tolerance.



Mediation Step-1

Table No.4.75: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.130[a]	.017	.013	1.29310

a. Predictors: (Constant), REP_AVG

Table No.4.76: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.893	1	6.893	4.122	.043[b]
	Residual	399.633	239	1.672		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), REP_AVG

Table No.4.77: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.261	.199		11.374	.000
	REP_AVG	.135	.067	.130	2.030	.043

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using representativeness bias as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.017 that's shows 1.7% variation is represented by representativeness bias in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that

there are 6.893 points of variation by representativeness bias on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 399.633 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that representativeness bias has a direct relation with investment performance because significant value is less than 0.05 and value of beta is positive. That shows if a person is higher in representativeness bias is also higher in investment performance.

$$EC = \alpha + \beta(\text{Representativeness bias})$$

$$EC = 2.261 + 0.135(\text{Representativeness bias})$$

Mediation Step-2

Table No.4.78: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.178[a]	.032	.028	1.33460

a. Predictors: (Constant), REP_AVG

Table No.4.79: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.004	1	14.004	7.862	.005[b]
	Residual	425.699	239	1.781		
	Total	439.702	240			

a. Dependent Variable: FRT_AVG

b. Predictors: (Constant), REP_AVG

Table No.4.80: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.327	.205		11.338	.000
	REP_AVG	.193	.069	.178	2.804	.005

a. Dependent Variable: FRT_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using representativeness bias as predictor variable and financial risk tolerance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.032 that's shows 3.2% variation is represented by representativeness bias on financial risk tolerance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance

value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 14.004 points of variation by representativeness bias on financial risk tolerance. Total number of points of variation in Predicted variable is 439.702 and un-explained number of points are 425.699 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative).Table shows that representativeness bias and financial risk tolerance has a direct relation because significant value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta(\text{Representativeness bias})$$

$$EC = 2.327 + 0.193(\text{Representativeness bias})$$

Mediation Step-3

Table No.4.81: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.161[a]	.026	.022	1.28720

a. Predictors: (Constant), FRT_AVG

Table No.4.82: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.532	1	10.532	6.357	.012[b]
	Residual	395.994	239	1.657		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), FRT_AVG

Table No.4.83: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.187	.194		11.300	.000
	FRT_AVG	.155	.061	.161	2.521	.012

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using financial risk tolerance as predictor variable and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.026 that's shows 2.6% variation is represented by financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that

there are 10.532 points of variation by financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 395.994 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table describes that financial risk tolerance has a direct relation with investment performance because significant value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta(\text{Financial risk tolerance})$$

$$EC = 2.187 + 0.155(\text{Financial risk tolerance})$$

Table No.4.84: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.191[a]	.037	.028	1.28284

a. Predictors: (Constant), FRT_AVG, REP_AVG

Table No.4.85: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	14.857	2	7.429	4.514	.012[b]
	Residual	391.669	238	1.646		
	Total	406.526	240			

a. Dependent Variable: IP_AVG

b. Predictors: (Constant), FRT_AVG, REP_AVG

Table No.4.86: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.943	.245		7.944	.000
	REP_AVG	.109	.067	.105	1.621	.106
	FRT_AVG	.137	.062	.142	2.200	.029

a. Dependent Variable: IP_AVG

The model summary table of the regression model shows us the relationship strength among Predicted variable and predictor variable in the regression model. In this model we are using representativeness bias and financial risk tolerance as predictor variables and investment performance as Predicted variable. Rate of R square shows us the contribution of predictor variable in Predicted variable. In current scenario rate of R square is 0.037 that's shows 3.7% variation is represented by representativeness bias and financial risk tolerance in investment performance and remaining variation in investment performance is caused by the other elements which are not incorporated in this research model.

ANOVA tables helps us to understand the effect of complete model and shows us the variation number of points by predictor variable that create variation in Predicted variable. Significance value of ANOVA tables shows the fitness of the complete model. The ANOVA table shows that there are 14.857 points of variation by representativeness bias and financial risk tolerance on investment performance. Total number of points of variation in Predicted variable is 406.526 and un-explained number of points are 391.669 means variation of these points caused by other variables which are not included in the study. Significance value is lower than 0.05 indicates that changes in Predicted variable is caused by in Predicted variables used in this research model.

The coefficients table help us to understand the relation among predictor variable and Predicted variable as well as the direction of the relationship (Positive or negative). Table shows that

representativeness bias has no relation with investment performance because significant value is not lower than 0.05. Financial risk tolerance and investment performance has a direct relation because significant value is less than 0.05 and value of beta is positive.

$$EC = \alpha + \beta_1(Representativeness\ bias) + \beta_2(Financial\ risk\ tolerance)$$

$$EC = 1.943 + 0.109(Representativeness\ bias) + 0.137(Financial\ risk\ tolerance)$$

Mediation Analysis		Equation	Sig. Value
Step-1	Conduct a simple regression analysis with X predicting Y.	$Y = \beta_0 + \beta_1 X + e$	X = 0.043
Step-2	Conduct a simple regression analysis with X predicting M.	$M = \beta_0 + \beta_1 X + e$	X = 0.005
Step-3	Conduct a simple regression analysis with M predicting Y.	$Y = \beta_0 + \beta_1 M + e$	M = 0.012
Step-4	Conduct a multiple regression analysis with X and M predicting Y,	$Y = \beta_0 + \beta_1 X + \beta_2 M + e$	X = 0.106 M = 0.029

4.6 Results Discussion

First hypothesis of the study was impression of psychological biases on perceived investment performance. In this analysis we check the all six biases and financial risk tolerance impact on investment performance. In first step over optimistic bias, herding bias, representativeness bias and financial risk tolerance are significant regret aversion bias anchoring bias and overconfidence bias were insignificant. Because significant value of over confidence bias is the higher among all the variables so eliminate this variable and perform the regression test again. In second step over optimistic bias, herding bias, representativeness bias and financial risk tolerance are significant and regret aversion bias and anchoring bias were insignificant, regret aversion bias was eliminated because significant value was higher among all the variables. In third step over optimistic bias, herding bias, representativeness bias and financial risk tolerance were

significant and anchoring bias was insignificant. In fourth step anchoring bias was eliminated and over optimistic bias, herding bias, representativeness bias and financial risk tolerance were significant.

Second hypothesis of the study is impact of psychological bias on perceived investment performance with intermediating effect of financial risk tolerance. To check the mediation effect analysis was divided into 4 steps, in first step impact of psychological on investment performance was analyzed that shows there is no relation among psychological biases and investment performance because results are not significant. In second step impact of psychological biases on financial risk tolerance was analyzed that shows there is a relation among psychological biases and financial risk tolerance because result are significant. In third step impression of financial risk tolerance on investment performance was analyzed that shows financial risk tolerance has direct relation with investment performance because results are significant. In fourth and final step of then hypothesis analysis impact of psychological biases and financial risk tolerance was analyzed on investment performance. Results shows that psychological biases has no relation caused by insignificance but financial risk tolerance shoes significant results. Predictor variable is Insignificant and mediating variable is significant shows full mediation effect of mediating variable.

After 2nd hypothesis test mediation is analyzed with the help of each bias. To check mediation we run the regression analysis in four steps in first step we check the impact of independent variable on dependent variable, in second step check the impact of independent variable on dependent variable, in third step check the impact of mediating variable on dependent variable and in the fourth and last step of mediation check the combine impact of independent variable and mediating variable on dependent variable. (If step 1 and 2 both are in-significant then no further step will be analyzed).

Third hypothesis of the study is impact of overconfidence on perceived investment performance with mediating effect of financial risk tolerance. In first step of this analyses model is not fit because significant value is not lower than 0.05 and according to coefficients table there is no relation among over confidence bias and investment performance because significant value is not matching the thump rule. In Second step over confidence bias impact on financial risk tolerance was analyzed. According to significance there is no relation among financial risk tolerance and

over confidence bias because model is not fit and significance value is not less than 0.05. Because overconfidence bias has no relation with investment performance and financial risk tolerance no further step of mediation will be run.

Fourth hypothesis of the study was impact of over optimistic bias on perceived investment performance with mediating role of financial risk tolerance. Over optimistic bias has positive and direct relation with investment performance because significance value is lower than 0.05 and value of beta is also positive and direct relation. In second step over optimistic bias has no relation with financial risk tolerance because significance vale is not lower than 0.05 and model is not fit for analysis.

Number Five hypothesis of current research was impact of regret aversion bias on investment performance with intermediating role of financial risk tolerance. In first step relationship between regret aversion bias and investment performance is insignificant because sig-value is not less than 0.05. In second step impact of regret aversion bias on financial risk tolerance was checked and results are significant because model is fit for study and significant value is less than 0.05, value of beta is positive that indicates that relationship between these variables is positive and direct. Third step of this hypothesis was to check the impact of intermediating variable financial risk tolerance on depending variable investment performance. Results indicates that model is fit for study and relation between mediating variable and depending variable is significant and direct. In last step of this hypothesis analysis impact of regret aversion bias and financial risk tolerance on investment performance was analyzes. Results shows that regret aversion bias has no direct relation with investment performance but with the help of mediating variable regret aversion bias shows significant and full mediation effect of financial risk tolerance between regret aversion bias and investment performance.

Number six hypothesis of this study was impact of Herding bias on perceived investment performance with mediating effect of financial risk tolerance. According to first step herding bias has no relation with depending variable investment performance because results are insignificant. According to second step results indicates herding bias has a positive and direct relation with mediating variable financial risk tolerance because sig-value is less than 0.05. Third step shows that mediating and dependent variable have a positive relation because results are significant. In fourth and last step of this hypothesis combine effect of herding bias and financial risk tolerance

was analyzed on investment performance, according to results model is fit for study and shows full mediation of financial risk tolerance between herding bias and investment performance.

Seventh hypothesis of the study was impact of anchoring bias on perceived investment performance with mediating effect of financial risk tolerance. In first step of this hypothesis analysis results shows that anchoring bias and investment performance has a positive relation because results are significant, second step was impact of anchoring bias on financial risk tolerance. There is no relation between anchoring bias and financial risk tolerance because results are insignificant, because there is no relation between independent variable and mediating variable no further step will be form to check mediation.

Eighth and last hypothesis of the study was impact of representativeness bias on investment performance with mediating effect of financial risk tolerance. Acceding to first and second step of this hypothesis analysis representativeness bias has relation with investment performance as well as with financial risk tolerance. This step of the analysis indicates us about the direct relation between financial risk tolerance and investment performance. In last step of this hypos this analysis combine effect of representativeness bias and financial risk tolerance on investment performance was analyzed, results shows that independent variable is insignificant and mediating variable in significant results and shows full mediation of financial risk tolerance between representativeness bias and perceived investment performance of individual investors.

Summary of Acceptance and Rejection of Hypothesis

Hypothesis		Results
H_1 :	There is an impact of Psychological biases on perceived Investment performance of investors.	H_1 Rejected
H_2 :	There is an impact of Psychological biases on perceived Investment performance with mediating effect of financial risk tolerance.	H_0 Rejected
H_{2a} :	There is an impact of Overconfidence bias on perceived investment performance with mediating effect of financial risk tolerance.	H_1 Rejected
H_{2b} :	There is an impact of Over Optimistic bias on perceived investment performance with mediating effect of financial risk tolerance.	H_0 Rejected
H_{2c}	There is an impact of Regret Aversion bias on perceived investment performance with mediating effect of financial risk tolerance.	H_o Rejected
H_{2d}	There is an impact of Herding bias on perceived investment performance with mediating effect of financial risk tolerance	H_o Rejected
H_{2e}	There is an impact of Anchoring bias on perceived investment performance with mediating effect of financial risk tolerance	H_1 Rejected
H_{2f} :	There is an impact of Representativeness bias on perceived investment performance with mediating effect of financial risk tolerance.	H_0 Rejected

CHAPTER NO. 5

CONCLUSION AND RECOMMENDATION

This chapter summarizes all the findings of the research, which are about the psychological biases having the impacts on the individual investor's investment performance and their level of financial risk tolerance. The chapter also gives some recommendations to the individual investors. Besides, the contributions, and the further dimensions for research are also presented in this chapter.

5.1 Conclusion

Recent research finds that individual investors are inclined toward behavioral biases and that they make trading mistakes. However, are emerging market investors more inclined or less inclined toward behavioral biases and trading mistakes, as compared to developed market investors? To address this question, we study Lahore and Faisalabad individual investors.

The current exploration has been planned to analyze the encouragement of psychological biases on perceived investment performance with intermediating part of financial risk tolerance. In this research we use six biases counting Over Confidence Bias, Over Optimistic Bias, Herding Bias, Anchoring Bias, Representativeness Bias and Regret Aversion Bias. Psychological biases are predictor variables, investment performance is Predicted variable and financial risk tolerance used as a mediating variable. Main purpose of the study is that most of the investors take according to their psychological biases and psychological traits that's why some of them are more risk taker and some of them are less risk taker (Kubilay & Bayrakdaroglu, 2016). On the other hand it is also important to analyze the impact of psychological biases on perceived investment performance and how psychological biases effect financial risk tolerance.

This study used quantitative approach to collect the data, data was collected by distributing 275 questioners using convenient sampling technique (Snow Ball) among stock investors of Lahore and Faisalabad city 243 questionnaires was collected with the support of survey method. Out of

243 responses 16 respondents are female stock investors and 225 respondents are male. In this study the instrument which is used to collect the data is designed with the help of items of each variables which are already used in the previous studies by different authors. Five questions/items are used to measure the Predicted variable Financial Risk Tolerance which were used by (Jacobs-Lawson, 2005). Four questions are used to measure Over Confidence Bias, which was used by (Zaiane & Abaoub, 2010). Five questions are the items to measure Over Optimistic Bias, which was used by (Insert Reference). Five questions are the items to measure Regret Aversion Bias, which was used by (Marcatto & Ferrante, 2008). For herding bias (4 items) and anchoring bias (4 items) the questionnaire is adapted by the (Le Luong & Thi Thu Ha, 2011).

To examine the data we use SPSS (statistical package of social sciences) software and it is found that 92 percent respondents are male and 7 percent are female respondents, qualification of the respondents are undergraduate, graduate, post graduate and Above. Reliably and validity of each variables is check and then move towards main purpose of the study to analyze hypothesis. To analyze the hypothesis regression analysis (simple linear regression and multiple linear regression) was used in this study. Pearson correlation table used to check the correlation among variables.

5.2 Discussion

The study is finished by giving all the answers for the research questions raised in the Chapter 1. This means the research objectives are done and the hypotheses are tested. The following part gives the conclusions for the study by presenting the main points to answer the research questions. First hypothesis of the study was rejected that's psychological biases has impact on investment performance, but through mediation effect of financial risk tolerance psychological biases impact investment performance and financial risk tolerance shows full mediation effect between psychological biases and perceived investment performance. In remaining hypothesis of the study Shows that representativeness bias, herding bias, regret aversion bias and over optimistic bias effect the investment performance of individual investors of Faisalabad AND Lahore city (Lahore Stock exchange).

5.4 Recommendations

Beside the individual investors who may benefit directly from the findings of this study, the security organizations can use these findings as reference for their analysis and prediction of the trends of the security market. The joint-stock companies, which raise the capital from stockholders, can use the results of this study to have good decisions to attract the investors to buy their stocks.

5.5 Limitations and Future Directions

First limitation is that, the study has been carried out only on individual investors in two cities and one financial market Lahore stock exchange.

We take sample size of 275 individual investors of Lahore stock exchange, for future studies take the large number of sample size.

Our study limited to Faisalabad and Lahore city, future studies can explore in other city of Pakistan or even another country.

Our study focused on one stock exchange, future studies may explore other stock exchanges and compare the results.

The further researches are also suggested to apply other psychological biases to explore the behaviors influencing the decisions of individual as well as institutional investors at the various Stock Exchanges of Pakistan.

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QUESTIONNAIRE

This research is being carried out to find the Effect of Psychological biases on Financial Investment Behavior of investors working in Financial Markets. The results of this survey will be used for academic purposes only. The survey is anonymous and personal information cannot be connected to a specific respondent. **The researcher greatly appreciates your help and support with this research.**

Section A:
Demographic Characteristics

1. Name (Optional)_____

2. Name of your Organization…….

3. What category does your institution fall? Public [……] Private […….]

4. What is your field of study at University/College?

i. Business
ii. General Arts
iii. Science
iv. Engineering
v. Other

5. What is your current Education Level?

i. Undergraduate
ii. Graduate
iii. Post Graduate
iv. Above

6. What's your age?

i. Under 18 years
ii. 19 to 21 years
iii. 22 to 24 years
iv. 25 to 27 years
v. 28 years or above

8. What is your monthly average income?

i. Up to 40,000
ii. 41,000 to 50,000
iii. 51,000 to 60,000
iv. 61,000 to 70,000
v. 70,000 to 90,000
vi. Above 90,000

9. What is your Gender?

i. Male
ii. Female

9. Marital Status?

i. Married
ii. Unmarried

Section-B

FINANCIAL RISK TOLERANCE (Jacobs-Lawson, 2005)

Please indicate the response best indicates from each of the following. **Tick any one number according to the following scale.**

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

#	Questions					
i.	I am willing to risk financial losses.	**1**	**2**	**3**	**4**	**5**
ii.	I prefer investments that have higher returns even though they are riskier.	**1**	**2**	**3**	**4**	**5**
iii.	The overall growth potential of a retirement investment is more important than the level of risk of the investment.	**1**	**2**	**3**	**4**	**5**
iv.	I am very willing to make risky investments to ensure financial stability in retirement.	**1**	**2**	**3**	**4**	**5**
v.	As a rule, I would never choose the safest investment when planning for retirement.	**1**	**2**	**3**	**4**	**5**

PSYCHOLOGICAL BIASES

There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

1	2	3	4	5
Strongly Disagree	Disagree	neither agree nor disagree	Agree	Strongly Agree

	Over Optimistic Bias (Kubilay & Bayrakdaroglu, 2016)					
i.	In uncertain times, I usually expect the best.	**1**	**2**	**3**	**4**	**5**
ii.	I'm always optimistic about my future.	**1**	**2**	**3**	**4**	**5**
iii.	I hardly ever expect things to go my way	**1**	**2**	**3**	**4**	**5**
iv.	I rarely count on good things happening to me.	**1**	**2**	**3**	**4**	**5**
v.	Overall, I expect more good things to happen to me than bad.	**1**	**2**	**3**	**4**	**5**

1	2	3	4	5
Strongly Disagree	Disagree	neither agree nor disagree	Agree	Strongly Agree

Regret aversion Bias (Marcatto & Ferrante, 2008)						
i.	I am sorry about what happened to me	**1**	**2**	**3**	**4**	**5**
ii.	I wish I had made a different choice	**1**	**2**	**3**	**4**	**5**
iii.	I wish the events that were beyond my control had happened differently	**1**	**2**	**3**	**4**	**5**
iv.	I feel responsible for what happened to me	**1**	**2**	**3**	**4**	**5**
v.	Things would have gone better if… I had chosen differently.	**1**	**2**	**3**	**4**	**5**
Anchoring Bias (Q.i and ii Le Luong & Thi Thu Ha, 2011) (Q.iii and iv Murithi, 2014)						
i.	You rely on your previous experiences in the market for your next investment.	**1**	**2**	**3**	**4**	**5**
ii.	You forecast the changes in stock prices in the future based on the recent stock prices.	**1**	**2**	**3**	**4**	**5**
iii.	Do you as an investor consider the past performance of a stock before investing in it?	**1**	**2**	**3**	**4**	**5**
iv.	Do you fix a target price for buying/selling in advance (say before start of trading day)?	**1**	**2**	**3**	**4**	**5**
Herding Effect (Le Luong & Thi Thu Ha, 2011)						
i.	Other investors' decisions of choosing stock types have impact on your investment decisions	**1**	**2**	**3**	**4**	**5**
ii.	Other investors' decisions of the stock volume have impact on your investment decisions	**1**	**2**	**3**	**4**	**5**
iii.	Other investors' decisions of buying and selling stocks have impact on your investment decisions	**1**	**2**	**3**	**4**	**5**
iv.	You usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market	**1**	**2**	**3**	**4**	**5**
Representativeness (Le Luong & Thi Thu Ha, 2011)						
i.	You buy 'hot' stocks and avoid stocks that have performed poorly in the recent past.	**1**	**2**	**3**	**4**	**5**
ii.	You use trend analysis of some representative stocks to make investment decisions for all stocks that you invest	**1**	**2**	**3**	**4**	**5**

Overconfidence Bias (Zaiane & Abaoub, 2010)

Q.1: Overconfidence in general situations

Suppose that you are related to a group of people who have a similar background and social status as you. Generally, when compared with them, you will most probably feel that you are:

1	2	3	4	5
Not good at all	not as good as the average	about the same	better than average	better than all

Q.2: Overconfidence in investment performance related with peers

Compared with the investors you are acquainted with, you believe your investment performance is:

1	2	3	4	5
Not good at all	not as good as the average	about the same	better than average	better than all

Q.3: Overconfidence in investment performance related with the market as a whole

When considering the next three months, do you have confidence in beating the market as a whole?

1	2	3	4	5
No. I have no confidence at all.	Yes. I have some confidence.	Neutral	Yes. I have much Confidence	Yes. I have very much confidence

Q.4: On average, how long do you hold your stocks in your portfolio?

1	2	3	4	5
For very long time	For long time	neither long nor short	For short time	For very short time

INVESTMENT PERFORMANCE

Investment performance (Le Luong & Thi Thu Ha, 2011)						
i.	The return rate of your recent stock investment meets your expectation	**1**	**2**	**3**	**4**	**5**
ii.	Your rate of return is recently equal to or higher than the average return rate of the market	**1**	**2**	**3**	**4**	**5**
iii.	You feel satisfied with your investment decisions in the last year (including selling, buying, choosing stocks, and deciding the stock volumes).	**1**	**2**	**3**	**4**	**5**