Impacts Of Heuristic Biases on Investment Decision Making in Pakistani Market by Mediating Role of Locus of Control

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Abstract

The purpose and aim of our research studies is to identify the influence of three commonly heuristic biases for example availability, representative and overconfidence biasness on decision making, also identify how much these biases effects our investment. which is mediated by the locus of control bias. This is quantitative research in this research we used a review and questionnaire method on behalf of the getting data from respondents. Data is collected from 200 local financier of Sialkot Pakistan. From the results of this search study we revealed and disclosed the effect of three of our heuristics variables causes the investors towards diverge after logical decision-making process significantly and locus of control's have not a significant result on investment decision making process. Our model gives us perception much heuristic or other behavioral issues can tip the investor to some sub-optimal decision making process. Our research found that it is beneficial and useful for individual investor, foreign individual investor, managers of investment, and for policy makers also.

Keywords: Investment, Heuristics, Investment decision making, Pakistan, Biases.

Paper type: Research paper

1. Introduction

Investment is the method or process of investing wealth in order to gain future benefit or profit (Avazov & Maxmudoy, 2020). when the investor made decisions on the basis of clear mind, knowledge about the investment and effective research the can result in healthy outcome so the investor have to make proper research and gather knowledge about the investment and the investment area. It is human's thinking to get determined and maximum return on the assumption and irrational investment decisions that the investor made during investment. (Sattar, Toseef, & Sattar, 2020). In past few years, many researchers indicated that the best decision making process is always dependent on how much the investors have information and experience about the investment and investment areas (Sattar, Toseef, & Sattar, 2020). The heuristics behavior

influenced the investors while investing in bank deposits, gold & silver, residential flats and apartments, stock and shares and agricultural land (Vijayalakshimi, 2019). Being considered as rule of thumb it does not provide optimal and productive investment decisions but assists investors in making decisions based on the potential of problem solving. The present study mainly focuses on obtaining and understanding about heuristics biases such as psychology and investment behaviors of investors, recognizing the major types of heuristics (Johny & Royit, 2019). If people have knowledge about investment the best decision, he/she is able make and able to get higher future return. The major portion of this research is focused on individual's decision-making behavior. which are necessary in financial markets and other financial institutions like banks etc. especially the investors dispatch for bulk of activity (Gabaix, Gompers, & Metrick, 2001). Heuristics are set of rules or principles sometimes followed by investors for making their investment decisions to choose upon the suitable alternatives. The Understanding and awareness about investment and investment areas like financial market is very important to gain future benefit. If investor clearly understands the financial behavior or knowledge about behavioral finance it will help them in the selection of optimal instrument of investment such as investment in stock and shares, any banking product and property etc. as a result, they can resist the errors that cost a heavy amount in future. A heuristic method is basically an impure or unrefined rule of thumb used to make judgments about possibilities, future revenues generation and so on while a bias is said to be a partiality concerning making of judgmental errors (Tversky & Kahneman, 1974). These heuristics are sometimes useful in some cases specially when the investor have limited time to make decisions but in long run they might lead to biases and errors. Thus, heuristics and biases technique involve heuristic individuals employ to make judgement and linked biases in them. The relevant issues are how these biases and heuristics affect investment decision making. In each and every step of investment requires variety of choices and reasons for choosing particular investment area to invest wealth (Venkatapathy & sultana, 2016). It is difficult for investor to choose and select the areas of investment because sometimes the capital market provides higher return than the financial market. (wijiya & Ferrari, 2020).

In this research study, mediating result of mediator in the connection of investment decision process and heuristic biases are discussed. Actually human memory is not durable and there are always chances of errors and mistakes. Some investors and people rely more on heuristics if they

think that their personal effort will increase the outcome and they will be dependent on their own instincts (Sharma et al, 1981). The main purpose and aim of this research is to discover impact of heuristics biases on investment decision creation process by investors with mediating role of LOC in Pakistan.

2. Literature Review

This section of research discusses, the influence of representativeness, overconfident and availability biases on the investment decision making process.

2.1 Investment Decision

Investment can be successful by doing research and gather proper information about investment and investment area (Shah, Ahmad, & Mahmood, 2018). The investment decisions are continuously made on the base of many factors such as current and potential shares of any company, technology use in the company and the value of company in the close period (Caselli & Negri, 2018). The best investment decisions are depending upon the financial information, data and the confidence level of investor in Pakistani market (Shawahna et al, 2017). Investor's conclusion is affected by his/her own behavioral preconceptions which sometimes lead to irrational investment conclusions and poor investment performance.

When the investment area is inefficient and role of information is weak so the investors fails to make profitable investment in the market. Investors use heuristics in their decision making and are irrational in their approaches. They are affected by week result like weekly high returns, previous prices, take risks with their investment and use market capitalization ratio. The Pakistani commercial markets and other investment areas are inefficient and investor do not have broad data and knowledge about market and market's changings changes. Sometimes the investors are not able or try to make rational investment decision due to their social preconception. The best way and method of thinking power will increase the quality of their decision making process Sometimes it is useful to make desire decision but sometimes it result in negative and irrational decisions (Martjee & Mertand, 2012).

2.2 Representative Bias

In representative bias mean taking decision for investment on the biases of past performance of the same company relatively than the peer groups. In this bias the investor always tries to make decisions by judging something and correlating or comparing it with others. The decisions became unclear and vague, as it is not confirmed that the judgment is right or wrong (Tversky and Kahneman, 1970). They will be inclined to buy stocks, shares and any property which value have been increasing recently. It saves time and sometimes is right but usually results in representative bias and wrong decisions.

The investor always wishes to buy stocks, banking products, gold and property etc. to get high return (Chen et al, 2007). The biasness is occurred when investors make an investment as good or bad established on its recent presentation. Therefore, the investors always try to bought stocks etc. But in case of land, gold and dollar the investors try to invest their money to sell it when the prices of land, gold and dollar have risen. The investment decisions of the investors vary because of their representativeness that they relate company's condition to the past company's condition (Filbeck, 2005). According to Arrfelt (2013) this bias is began when the investors sees the reputation and past performance and success of the area of investment. They are unable to see that what the area of investment can give them in the future. So some areas of investment are good in past can go in loss in the future and vice versa (Petkova, 2014). The investors trust or depend on the factors like goodwill that vary with time so this is an irrational attitude of investor towards investment.

H1: The RB has a positive significant effect on LOC.

H2: RB has significant positive effect on DM.

2.3 Availability bias

Investors have healthier self-confidence, they rely on knowledge and skills for making better investment to get high return from their investments. some investors only believe on voluntarily available information rather than making research and examining the factors and alternatives attached with the investment which causes irrational investment decisions. The investors try to wish to invest in local aware and well-known companies which base on easily existing data (Waweru et al, 2008. Availability heuristics is often employed when people trust on current information to make their decisions and overlook all the previous data and details which make it biased opinion and wrong decisions (Kliger & Kudryavtsev, 2010).

In this research study we are focusing on investment in banks products, gold, lands and other properties and stocks etc. in Pakistani market and usually these decisions are made under undefined situations. Investors should calculate the chance of getting profits or earning loss on any stock and other investment area whether they want to sell, hold or purchase it.

H3: AB has positive impact on LOC

H4: OB biasness has major positive impact on DM.

2.4 Overconfidence Bias

The investors having large amount of Overconfidence will make him/her risk taker and risk seeker and the investors have the low confidence power will make him/her risk averse (Dominic & Gupta.2020). The overconfidence bias is one of the heuristic bias which defines as unnecessary faith in one's judgment and thinking power. The effect of overconfidence on investors is to misjudge and overestimate the knowledge and skills of investors. The investors who are overvalue and more confident about themselves for what they are or what they are not suffered from overconfidence bias. the overconfidence bias effects very greatly the decision making process and investment. Overconfidence also impacts investor's financial decisions and financial decision of an institute. The people's overconfidence is also affected by gender and age etc. (Tyynela & Perttunen, 2003). It greatly effects the decision making process of an investor while taking decision in investment. So the people(investors) should be under confident and not overconfident when they invest in different investment areas. In behavioral finance the overconfidence bias is one of the establish Heuristic and psychological factor and bias which effects the investment decision greatly (Dominic & Gupta.2020).

H5: OB has positive significant effect on LOC.

H6: OB has significant positive effect on DM.

2.5 Locus of Control

It is all about this person's own ability to think. Some investors think it is very helpful for investment decisions which leads to increase the output of the investment. There are two types of locus of controls. For example, if any investor thinks the confident result and outcome can grow due to some external factors, such as chance and luck are external locus of controls (Selart, 2005).

For investment decision it is very important to compare the connection among the investment decision making procedure and heuristics biases. For this purpose, we have knowledge about both internal and external locus of controls. The Internal locus of control expresses about person's own power and his/her ability and external locus of control includes the outsides forces such as luck and chance etc. to control the outcomes of the investment so the investors have to know his/her own abilities to do perfect investment which can minimize the level of risk and losses of investment. Sometimes the investor does not know about his/her abilities and risk too much, some investors overvalue their abilities and trust that, they can control or change the market environments and investment areas (Gervais & O dean, 2001).

 H7: LOC has positive impact on DM.

H8: LOC mediates the relationship among AB and DM

H9: LOC mediates the relationship among RB and DM.

H10: LOC mediates the relationship among OB.

3. theoretical Framework:

3.1Theoretical Design

 The study which we did is aim to observe the effect of heuristic biases in investor's decision making which is being mediated by Locus of control. Study observed the relationships through conducting survey.

4. Research Methodology

The main objective of our research was to identify and investigate heuristic biases of investors and how it affects to local investor's decision making in Pakistan. In this part of study, we discuss the methods of collecting data and to analyze the collected data from respondents.

4.1 Research Design

In order to collect data from Pakistani local investors we used questionnaire method which records the responses along with Likert scale. The sample includes the investors from local market. Questionnaires were distributed among these investors.

4.2 Survey Research Method

It is a sequential process. According to our research, we have collected data in two stages. At first stage, we have written questionnaires for collecting data from respondents. For writing the questionnaires we get help from previous researcher's research papers consists of questions related to the age of respondents, amount of investment, age ranges and the years of experience in the first part. In the second part of our questionnaires it uses the availability, representative and overconfident heuristics to find their impact on Decision making when Locus of control plays the role of mediator. At second stage, we have selected 200 investors as our papulation sample from Sialkot Pakistan. We have collected data from different investors and according to that data we have taken certain decisions. This research method is also called "Field Experiment". It is conducted in natural environment. In order to collect data 200 questionnaires were distributed among local investors 150 were returned out of which 17 were spoiled and 133 were entered into the SPSS. Every individual investor that we have selected has experience starting from one year. Data is collected from Sialkot Pakistan. According to Osborne and Castell (2004), that there is no specific rule for determining sample size in case of behavioral studies.

4.3 Participant's Description

In this research we have selected male and female as our respondents. the total number of male respondents are 100% in our research and according to the age of respondents there is 20% respondents whose age is between 20 years to 25 years, there are 30.8% respondents whose age is 25 to 30 years, 41.5% respondents whose age is 30 to 35 years and there are 7.7% respondents whose age is above 35years.According to the year of experience of investors. There are 16 investors whose experience is less than 1 year, the 30.8% of respondents whose experience is1 to 5 years, the 45.4% of respondent whose year of experience is 5 to 10 years, the 11.5% respondent whose year of experience is more than 10 years. According to the investment level 8.5% respondents whose investment level is less than 2 lac. 20% respondents whose investment level is 200000--350000, 53.8% respondents who invests 350000--600000 and 17.7% respondents whose

investment level is 6 lacs. According to our research the 88% respondents are individual and 6% respondents are individual foreigner.

5. Results and Discussion

This research aims to check the impact of three types of heuristic biases on decision making and Locus of control plays the mediating role. We collected data through questionnaire from 133 Pakistani local investors. The collected data through survey was tested with the help of SPSS.

Table no.1

Demographic variables

S.no	Demographic variable	Demographic characteristics	Frequency	Percentage
1	**Age**			
		• 20-25	26	20
		• 26-30	40	30.8
		• 30-35	53	41.5
		• Above 35	10	7.7
		Total	130	100.0
2	**Gender**			
		• Male	130	100
		• Female	0	0
		Total	130	100
3	**Year of Experience**			
		• Less than 1	16	12.3
		• 1-5	40	30.8
		• 5-10	59	45.4
		• More than 10	15	11.5
		Total	130	100.0
4	**Investment**			
		• Less than 200000	11	8.5
		• 200000—350000	26	20
		• 350000—600000	70	53.8
		• Above 600000	23	17.7
		Total	130	100.0
5	**Investor Type**			
		• Individual	130	100

	Total	130	100.0

5.2 Reliability Analysis

To analyze reliability of study variables, the data from 130 investors was collected and entered into SPSS software. The reliability was identified by using Cronbach's α. The vales of Cronbach alpha should be above than 0.70 which concludes that this study is reliable for the future.

Table No. 2

Reliability analysis

Variable Name	Items	alpha
Availability bias	4	.700
representative bias	6	.715
Locus of Control	8	.702
Decision Making	5	.735
Overconfidence	6	.701

In this research according to the Cronbach's Alpha all items of variables are 7 and some are greater than 7. which shows that these items are reliable and use for future analysis. In this research study the Cronbach Alpha of locus of control is .702, availability bias is .700, representative bias is .715, decision making is .735 and the overconfidence is.701.

5.3 CORRELATION ANALYSIS

Table no 3

 Correlation Analysis

	availability bias	Representativ ebias	locusofcont rol	Decisionma king	overconfid ence

availabili tybias	Correlation (Pearson)	1				
	Sig. (2-tailed)					
	N	130				
represent ativebias	Correlation (Pearson)	.373**	1			
	Significance 2-tailed	.000				
	N	130	130			
locusofc ontrol	Correlation (Pearson)	.373**	.528**	1		
	Significance 2-tailed	.000	.000			
	N	130	130	130		
Decision making	Correlation (Pearson)	.298**	.420**	.360**	1	
	Significance 2-tailed	.001	.000	.003		
	N	130	130	130	130	
overconf idence	Correlation (Pearson)	.224*	.183*	.249**	.290**	1
	Significance 2-tailed	.001	.038	.004	.001	
	N	130	130	130	130	130

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

In the above analysis we can see that every variable has a 1 significance level when tested with itself. The output of correlation analysis shows positive relationship between the decision making and locus of control because the correlation between them is .373 which is significant at 0.000 level. Availability bias has a .298 correlation with decision making it means upto this level these two variables move in the same direction. Representative bias and locus of control has .420 and

.360 correlations with decision making respectively. According to our correlation analysis there is no any negative correlation between all the variables of study.

5.4 Coefficient Analysis

Table no. 4

Coefficients^a

Model	Unstandardized Coefficients..		Standardized Coefficients..		
	B	Std. Error	Beta	t	Sig.
Constant	.472	.480		.983	.328
Availabilitybias	.109	.091	.104	1.206	.230
representativebias	.328	.110	.280	2.986	..003
Overconfidence	.202	.089	.184	20274	.025
Locusofcontrol	.163	.121	.127	1.340	.193

a. Dependent Variable: Decision making

Value of B shows if there is increase in one unit of independent variable will take in increase in dependent variable. For example, the B value for availability bias is .109 that indicates by changing the independent variable dependent variable is also changed. Value of B for representative bias is .328 which means that if we cause a change in representative bias it will bring an increase of .328 in decision making and vice versa. All IV have a nonstop impact on decision making. The value of B for overconfidence is .202 which means that one unit change in overconfidence will bring .202 unit change in decision making

$R^2 = .248$

$AdjustedR^2 = .224$

$F = 10.295$

In our research according to this test we found the significant relation among our variables. And how much the independent variables significantly affect the dependent variable.

the Regression analysis also shows and defines that how one variable is changed by a change in other dependent or mediator variable.

Mediation Analysis

In order to check the role of mediator Sobel test is used Baron and Kenny(1986).

Particulars IV →MV →DV	Test statistics	Significance One-tailed Two-tailed	Type of mediation
AB → LOC→ DM	5.0102328	0.000 0.000	Full
RB → LOC→ DM	5.0256651	0.000 0.001	Full
OC→ LOC→ DM	1.8032122	0.000 0.005	partial

The result of this analysis shows that LOC has full mediation between first two types of biases whereas it has partial mediation when checked with overconfidence. First of all, we have run the regression analysis between AB and decision making then simple linear regression was run upon LOC and decision making the values of coefficients and standard error were entered into the Sobel test calculator in order to test the mediation. The results show T-Value as 5.0102328 and both significance one tailed and two tailed are less than 0.001 which shows that LOC plays full mediation between first two types of biases. In third type of bias i.e. overconfidence the value of one tailed is less than 0.001 but the value of two tailed is more than 0.001 that shows a partial mediation of Locus of Control.

Summary of Hypothesis Testing

	Hypothesis	Results
H1	AB has positive impact on LOC.	Accepted
H2	RB has positive significant impact on LOC.	Accepted
H3	OB has positive significant impact on LOC.	Accepted
H4	LOC has positive impact on DM.	Accepted

H5	AB has significant positive impact on DM.	**Accepted**
H6	LOC mediates the relationship between AB and DM	**Accepted**
H7	RB has significant positive impact on DM.	**Accepted**
H8	LOC mediates the relationship between RB and DM	**Partially Accepted**
H9	OB has significant positive impact on DM.	**Accepted**
H10	LOC mediates the relationship between OC and DM.	**Partially Accepted**

Conclusion

This study helps to check the impact of heuristic biases which are our independent variables like availability, representative bias and overconfidence upon the decision making process which is our dependent variable regarding investments and investment areas. Such biases occur because of most of the time investor prefers to rely or depends on their heuristics. Even if the investor has knowledge about finance and also the value of repayment associated with them but still they make irrational decisions because of the heuristics. Not only normal people become affected by these biases but also there are highly knowledgeable and well educated investors are affected by these heuristic biases. Not only biases but also locus of control play dynamic role in making investment decisions. The most frequently used heuristics used in decision making are representative and availability biases but the thing that mediates these biases are overconfidence and locus of control to some extent. Sometimes, investors decision may lead towards wrong valuation of outcomes. The investors at Pakistani markets are strongly influenced by these kind of biases. The reason behind this may be the culture and trend of the country due to which there is high involvement of such factors can be seen. Investors only gather information about one investment and implement that on other situations and other investment areas. They consider the decision only from one perspective and ignore the situations and circumstances of the other investment opportunity. Sometimes estimations about an offer may converted into wrong or the information provided to investors can be false, in such case investors that rely on biases may invest in non-profitable chance. The main aim of this research is to make the reader accepting of actual and real-life attitude of investors.

8. *Future Implications and Limitations*

Usually traditional finance is considered to be the rough phenomena, and it is failed to discuss problems related to behavioral finance. This study helps to concentrate or focus on such issues of human behavior that affects investment decisions process. Investors can consider this information in order to analyze an investment decision. This paper can also be use by the organizations seeking for investment to estimate the market culture and provides more knowledge regarding behaviors of investors. The policy makers can get benefit of this research for getting information about the market behavior. They get to know about the information regarding investment decisions in market and also investor's behavior. In this research study, only three kind of biases are discussed and used in order to find the results so all the other ignored biases can be studied in the near future.

- There was no representation of female gender so it is optional to conduct a research on only female investor as they get more inclined by the biases because of their emotional nature.
- Future research can also be conducted to check and identify the behavior of investors on a larger scale by selecting a large sample in different areas of investment.
- Another recommendation could be concerning about mediator, in future paper could be published on all the other biases with the mediating effect of locus of control.

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