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Factors Influencing the Investor's Decision Making: The Moderating Role of Locus of Control

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Abstract

Investors from the whole world are looking for those stock markets that are less affected by interest rates. Pakistan is a good place to invest and the investors from the whole world are considering Pakistan for future ventures. The current study, therefore, aims to analyze the factors affecting investors' decision making in Pakistan with the interaction effect of locus of control. The primary data are gathered from 300 respondents. Structural equation modelling (SEM-PLS) is used to analyze the interactions among variables. The study finds positive impact of availability and representative biases on investment decision making. The study could not find any moderating role of locus of control. The results imply that decisions made by Pakistani investors are driven by the most easily or currently available information and they trust on the information obtained from family and friends without any authentication and verification. One possible description of insignificant moderation effect of locus of control can be the sample traits used in the study, e.g., personal characteristics, that change from culture to culture. Another description of these findings may be the association between heuristic biases, including availability, representative and psychological biases and decision-making regarding investment is not personality specific.

Keywords: Representative Bias, Availability Bias, Psychology Bias, Investment Decision Making, Locus of Control

JEL Classification Code: E44, F31, F37, G15

1. Introduction

A place where buying and selling of shares occurs is referred to as a stock market. For any economy, the stock market acts as a financing source for the investment of a business concern. The stock markets are the yardsticks for

the strength of an economy and for the development of a country. Although, the stock price movements or the market trends represent a country's economic health. An increase in the prices of shares represent a positive sign for an economy. Pakistan as an emerging country, is considered to be the best stock performing market in Asia for the period of 2016, even it stands at number fifth globally. Investors from the whole world are looking for those stock markets that are less affected by the interest rates. Pakistan is a good place to invest and the investors from the whole world are considering Pakistan for future ventures. Therefore, it is of vital importance to study the behavior of investors working in the stock market of Pakistan, and the factors affecting their investment behavior (IB).

IB is an advanced part of behavioral finance which elaborates on how the decision-making process such as collecting the information, and understanding the situation expected, explored and evaluated by an investor. This process is known as IB (Arrfelt, Wiseman & Hult, 2013). Most of the research in finance has been conducted on the rational IB which deliberates that the rationality of an investor leads to an efficient market outcome. The supposition behind

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the rationality of an investor is the utility maximization nature of an investor. Moreover, another supposition behind this rationale IB is that the prices of stock market move proficiently towards the utility maximization nature of an investor (Tong et al., 2020).

But in real world, neither the prices of stock market move like that proficiently as we assumed nor all the investors behave rationally. As traditional theory embraces that sometimes the investors may aimlessly over respond or under respond to the market situations and behave irrationally in constructing their decisions regarding investment (Hilton, 2001). This irrationality is persuaded by different reasons, one of the main reasons of this irrationality is human behavior.

Human behavior may oppose the fundamental prescription, particularly during the market ambiguity and confusion. The human behavior is obsessed by emotional, cognitive, psychological, availability and representative biases which leads to irrationality in their behavior regarding their investment decisions (ID) (Bowers, Greve, Mitsuhashi & Baum, 2014). Intuition, feelings, and emotions of investors affect their decisions which may result in irrational behavior (Zaidi & Tauni, 2012). The psyche of investors has strong impact on investment decision making (IDM) (Nguyen & Nguyen, 2020). Psyche and emotions are the main factors causing biases in IDM. These biases are described as predilections towards errors. Investors are inclined to many illusion, errors and biases while making ID. These biases and errors are also called heuristics (Slugoski, Shields & Dawson, 1993).

Heuristic refers to relying on things about which one instantly thinks of which makes him/her enable to make quick judgment and decision (Baker & Nofsinger, 2002). To rely on such things which make people to take good and quick decisions, helps them to avoid laborious checking of facts and analysis, but it also leads to flaws in the likelihood of decision making (Bashir, Azam, Butt, Javed & Tanveer, 2013). These heuristics cause severe errors in investors decisions which leads them to behave irrationally. The current study focuses on three heuristics commonly used in IDM; availability bias (AB), representative bias (RB) and psychological bias (PB). These biases not only affect laymen, but it is also applied to the experienced investors, which is another reason to select these biases in the current research.

The study also identifies the moderating role of locus of control (LC) in the associations between AB and IDM, RB and IDM and PB and IDM. Naturally, human beings think that an individual's own immersion may change the outcomes but, actually, the memory of humans is not reliable which may create chances of errors (MacLeod & Daniels, 2000). People also think that an event occurs due to their own efforts causing them to relay on their own perception (Coleman and DeLeire, 2000), which leads them to depend

more on heuristics. The current study is therefore conducted to explore the impact of AB, RB and PB on IDM and to test the moderating impact of LC on the said impact using the primary data collected from investors working in stock markets of Pakistan.

The remainder of the paper is arranged as following: the second section describes the review of literature and construction of hypothesis, section three explains the data and research methodology, section four consists of empirical results, fifth section of the study explains the discussions and conclusions, and at the end, the study provides policy implication, limitations and directions for future-research.

2. Literature Review

RB is defined as correspondence degree of an event with its protective inhabitants (Healy and Palepu, 2001). Investors consider that their prior familiarities and judgements are generally accurate, and on the basis of these previous judgements and familiarities they will make balanced choices in future. That's why investors are stuck in similar pattern of investment again and again that results in a vague image of present situation (Prechter, 2001). Deliberate investors know that it is necessary to make a laborious investigation of current situation before making an ID. However, they had propensity of depending on prior experience, that was disturbing the financial markets (Shimizu, 2007). In capital market, stakeholders do not behave as they should, they behave reasonably without considering their previous judgements (Filbeck, Hatfield & Horvath, 2005). From the last decade, many studies have been found trying to elaborate some aspects of the representativeness of performance of an investor. Today's stakeholders are significantly attracted by the repute, status and luminary effects of a firm (Pfarrer, Pollock & Rindovo, 2010). Generally repetitive occurrences are that of observing previous experiences instead of looking onwards, nonetheless investors fail to understand that future results may differ from their previous judgements (Arrfelt et al., 2013). These occurrences are the results of representative behavior of the investors.

H₁: RB is positively associated with IDM.

AB is a preference in which the managers depend on the existing knowledge, instead of investigating other substitutes and processes that results in irrationality in decision making (Folkes, 1988). It is perceived that investors prefer to invest in such countries, where information can be accessed easily (Waweru, Munyoki & Uliana, 2008). From the 20th century, researchers found different determinants of AB that influence IDM. Occasionally, investors make decisions without considering the appropriate information. Moreover, during the period of financial crises, investors suffered more due to their responses based on AB. Rather than estimating

all the information, investors use only available information that is easily accessible (Wang, Rodan, Fruin & Hu, 2014). Competition among stakeholders requires investors to respond rapidly to the available information (Bowers et al., 2014) and they depend on shortcuts like AB instead of making rational ID.

H₂: AB has positive association with IDM.

PB is a type of instant reaction of investors at the time of decision making which is defined as an overconfidence of knowing everything (Slugoski et al., 1993). Investors perceive that they know everything and think that they are smarter and have higher information and evidences. Psychological bias effects the ID (Bashir et al., 2013). Investors with psychological bias adversely affect the performance of overall market and make wrong decisions (Wang et al., 2014).

H₃: There is a positive relationship between PB and IDM.

LC is defined as the believes of the person that the anticipated consequences arise due to his own capabilities and aptitudes (Selart, 2005). In IDM, LC expresses about the magnitude or degree to which the LC influences the decision or choice of the investors. If investors consider that they can regulate the situation; they become motivated to make choices of investment. LC is an important interactive factor that is combined in the studies of those factors influencing the purchasing and virtues of consumer decisions making (Ozbek, Almiaçık, Akkılıç & Koç, 2013). Decision making of consumers are analogous to the IDM as investment is the purchasing choice of capital resources. Many researchers believe that LC carries the clarification for upcoming outcomes (Hiller & Hambrick, 2005) and it also clarifies the variations in the behavior of investors (Spector et al., 2002). Moreover, the nature of investment also affects the explanations of an investor about his personal aptitudes and capabilities (Lam & Schaubroeck, 2000). The LC has its influence on individual investors, and the decision makers who consider that the situation is under their control (Brauer & Wiersema, 2012). Some investors have no idea about their capabilities (Gervais & Odean, 2001) and become risk opposed, whereas some investors overvalue their capabilities by thinking that they can alter the market circumstances (Allen & Evans, 2005). These type of investors believe that they are superior; this belief leads them to irrationality and stupidity in their investment choices. The performance of the investors with internal LC is not well and they make biased decisions (Brauer & Wiersema, 2012). There is presence of LC in IDM if an investor expects that the reason and resistor of an investment will be in his/her control (Selart, 2005); therefore, he/she becomes irrational in IDM and his/her decision regarding investment becomes biased.

H₄: LC moderates the relationship between (a) RB and IDM, (b) AB and IDM and (c) PB and IDM.

3. Data and Methodology

The study is conducted on the factors affecting the investors' decision making (IDM) in Pakistan. The interaction effect of locus of control (LC) is also examined. For this purpose, the primary data are gathered from 300 respondents. The study is conducted among the investors working in the Pakistan's city of Faisalabad. SEM-PLS (assessment of measurement and structural models) is used to analyze the interactions among variables.

For the purpose of the study, a questionnaire is designed comprising of 33 questions. The questionnaire is then divided in to 5 sections. The section 1 focuses on the investors' basic information. The section 2, 3 and 4 comprises AB, RB and PB respectively. In the section 5, the measure of LC is constructed. The assessment of measures of response on IDM is analyzed in section 6. The study uses two types of questions to be asked from the respondents. The first type of questions consist of multiple-choice questions used to analyze the basic information of the respondents. The second type comprises of Likert type scale and covers the various aspects like AB, RB, PB, LC and IDM. These measurements are based on 5-points Likert scale.

3.1. Variables Description

IDM is used as explained while AB, RB and PB are used as explanatory variables. The study also uses LC as moderating variable. The explanation and measurement of these variables are as follows:

3.1.1. Investors' Decision Making (IDM)

The determination of assets' full amount to be held in a company refers to as investment decision (ID). It is considered to be the most important decision among financial decisions (Garcia-Sanchez & Garcia-Meca, 2018). As there is a limited quantity of available funds which also involve costs, the proper utilization of these funds is necessary to achieve the objective of maximization of wealth. As the resources and assets of a company are limited and must require their extreme utilization. Companies should invest these resources and assets to gain highest return (Nguyen, Quang & Dinh, 2020). ID requires a careful selection of assets in which a company can invest their funds (Filatotchev, Poulsen & Bell, 2019). A company invests its funds to acquire current as well as fixed assets. The choice of acquiring fixed assets is known as IDM. The measurement of this variable is taken from Scot and Brucee (1995). Out of which the current study only incorporated intuitiveness in the questionnaire as a proxy measure for extent irrational behavior of IDM. The study uses 5 items of decision making to quantify this variable.

3.1.2. Availability Bias (AB)

The tendency of a human to think about those things that readily come to the mind are highly representative than in the case of actual facts, is referred to as AB. The phenomenon of psychology is one for a lot of cognitive biases that hinder the critical thinking which ultimately affects the decision-making process (Boone & Witteloostuijn, 2005). AB is an output which comes from a cognitive short-cut called “availability heuristic”. Heuristic refers to rely on the things about which one instantly thinks of which makes him/her enabled to make quick judgment and decision (Baker & Nofsinger, 2002). To rely on such things which makes people to take good and quick decisions helps them to avoid laborious checking of facts and analysis, but it is also likely to create flaws in decision making (Bashir et. al., 2013). The measure of AB comprises of 5 items. Out of which first 2 are taken from a scale of 10 times to measure biases and heuristics by Kudryavatsv, Cohen and Hon-Snir (2013). The 3rd and 4th items are taken from Lin and Ding (2003). While the item number 5 is taken from Waweru et al. (2008).

3.1.3. Representative Bias (RB)

When the similarity of events or objects confuses the thinking of individuals about the uncertainty of an outcome (Arrfelt et. al., 2013), is referred to as RB. The individuals make, frequently, the mistakes of believing those two same events, objects or things are most closely interlinked than they are in-actuality (Bryman & Bell, 2015). This bias is considered to be the most common error of information processing in the theory of behavioral finance (Bowers et. al., 2014). The measure of RB comprises of 6 items. Out of which first 3 questions identify the investors’ extent of representativeness using an item scale of 7 are taken from Lin and Ding (2003). The 4th and 5th items are adopted from Waweru et al. (2008). While the item number 6 is also taken from Lin and Ding (2003).

3.1.4. Psychology Bias (PB)

The tendency to take actions or to take decision in an illogical way is referred to as PB. For concern, an individual may feel pressure by the powerful colleagues or may be pressurized to make use of selective data. This measure of PB consists of 5 items of PB.

3.1.5. Locus of Control (LC)

In the psychology of personality, LC refers to the extent to which individuals believe that they have control on the happening of events as opposed to the external factors not in their control. In 1954, this concept was introduced by

Julian Rotter. Individuals having strong internal LC believe that events/objects are derived basically by their own actions (Healy & Palepu, 2001). For concern, while receiving result of an exam, people having internal LC tend to blame or praise their abilities or themselves. People having believe on external LC tend to blame or praise on external forces. The LC generates much research work in the field of psychology. In order to measure the internal locus of control, an instrument constructed by Furnham (1986) is adapted. This measure consists of 6 items of internal locus of control.

4. Empirical Results

4.1. Demographic Information of Respondents

The section provides the demographic information of the respondents. 84.67% respondents are males while other 15.33% respondents are females. The percentage of married (unmarried) respondents is 59.67 (40.33). 12.33% of the total respondents are between the age of 18-25 years, the age of 32% respondents ranges from 26-33 years. 29% of the respondents are 34-41 years old. The percentage of 42-49 years’ age respondents is 18.67 while the rest 8% respondents are above 50. The respondents are also categorized on the basis of investment experience. 28.67% of the total respondents have 0-5 years of investment experience, 62.66% respondents have 6-20 years’ investment experience and 8.67% of the total respondents have experience of 21 years or above. Out of total respondents, 4.33% hold the higher secondary school certificate and 29% hold bachelor’s degree. The percentage of respondents with Master’s (M. Phil) degree is 51.33 (10.34) while the rest 5% have other degrees.

4.2. Assessment of Measurement Model

Figure 1 shows measurement model of the study. Cronbach’s alpha (CA) is used to determine the scale’s reliability. The measurement scales’ validity is found to be significant with the values of 0.834, 0.791, 0.803, 0.788 and 0.960 IDM, AB, PB, RB and LC, respectively. Adequate internal consistency (CR) measured in this research ranged between 0.834 to 0.935 (≥ 0.70). Furthermore, the study meets the criteria of convergent validity (as measured by AVE) at least 0.50 as suggested by Hair et al. (2011), see Table 1. In line with the previous researchers, to measure multicollinearity with in data, the HTMT ratio must not exceed 0.90 (Toe et al., 2008). The study meets this criterion as the Table 2 shows that the HTMT ratios ranged between 0.241 to 0.504. The outcomes of discriminate validity are given in Table 3, which suggests that all the off-diagonal value are less than diagonal values (bold values); showing that discriminate validity is present in the data.

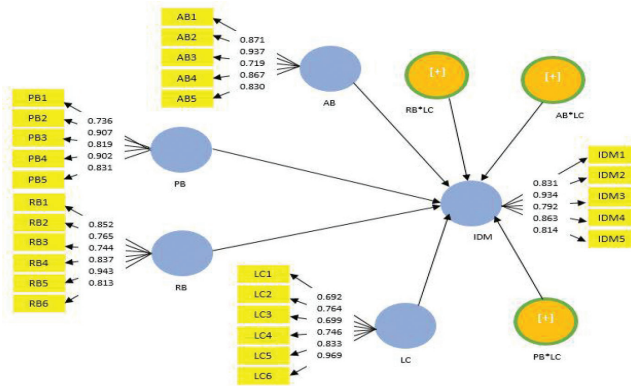


Figure 1: Measurement Model

4.3. Assessment of Structural Model

The study measures collinearity issues through VIF which is reciprocal of tolerance. The study is free from collinearity issues as no value is equal to or greater than 0.50 as suggested by Hair et al. (2011), see Table 1. To examine the impact of RB, AB and PB on IDM with the moderation of LC, the study employs PLS-SEM technique (see Figure 2). The results are provided in Table 4. RB has significant positive effect (Coef. 0.147, Prob. 0.020) on irrationality in IDM. An inclination in the level of RB leads to enhance the irrationality of IDM by 14.7%, supporting H₁. AB also has significant positive impact (Coef. 0.374, Prob. 0.000) on IDM. The impact is significant at the level of 1%. It shows that 1% increase in the level of AB leads to improve the irrationality in IDM by 37.4%.

Table 1: Measurement Model

Construct	Item Code	Loadings	CA	CR	AVE	VIF
Investor Decision Making	IDM1	0.831	0.834	0.934	0.763	1.634
	IDM2	0.934				
	IDM3	0.792				
	IDM4	0.863				
	IDM5	0.814				
Availability Bias	AB1	0.871	0.791	0.905	0.711	1.451
	AB2	0.937				
	AB3	0.719				
	AB4	0.867				
	AB5	0.830				
Psychology Bias	PB1	0.736	0.803	0.834	0.709	2.671
	PB2	0.907				
	PB3	0.819				
	PB4	0.902				
	PB5	0.831				
Representative Bias	RB1	0.852	0.788	0.837	0.718	2.318
	RB2	0.765				
	RB3	0.744				
	RB4	0.837				
	RB5	0.943				
	RB6	0.813				
Locus of Control	LC1	0.692	0.960	0.910	0.752	2.419
	LC2	0.764				
	LC3	0.699				
	LC4	0.746				
	LC5	0.833				
	LC6	0.969				

Note: "CA: Cronbach's Alpha, Composite Reliability, AVE: Average Variance Extracted, VIF: Variance Inflation Factor".

Table 2: Heterotrait-Monotrait Ratio (HTMT)

	IDM	AB	PB	RB	LC
IDM					
AB	0.264				
PB	0.504	0.289			
RB	0.301	0.367	0.467		
LC	0.267	0.288	0.241	0.334	

Table 3: Discriminant Validity (Fornell-Larcker criterion)

	IDM	AB	PB	RB	LC
IDM	0.834				
AB	0.394	0.794			
PB	0.307	0.246	0.821		
RB	0.241	0.211	0.340	0.887	
LC	0.197	0.241	0.198	0.207	0.787

Table 4: Hypotheses Testing

Effect	Relation	Coefficient	p-value	Decision
Direct				
H ₁	RB→IDM	0.147	0.020 ^b	SP
H ₂	AB→IDM	0.374	0.000 ^a	SP
H ₃	PB→IDM	0.497	0.347	NSP
Indirect/ Moderating				
H _{4a}	RB*LC→IDM	0.167	0.301	NSP
H _{4b}	AB*LC→IDM	0.793	0.437	NSP
H _{4c}	PB*LC→IDM	0.591	0.228	NSP

Note: "SP: supported, NSP: not supported, a and b: significant at 1% and 5%, respectively".

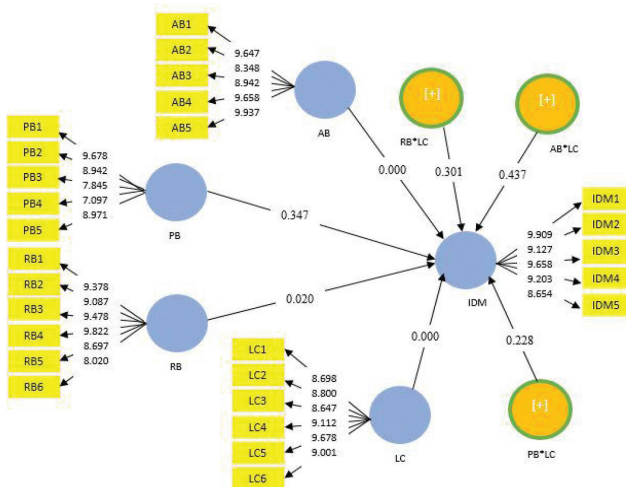


Figure 2: Structural Model

Meaning that more the investors have AB, the higher they are irrational in the process of decision making. Hence, the H₂ is supported. Moreover, the study does not find any significant impact of PB on IDM, and hence rejecting H₃. Furthermore, the impact of LC as a moderator on the association between RB and IDM, AB and IDM and PB and IDM is found to be insignificant as the probability value is greater than 0.05, and hence rejecting H_{4a, b and c}.

5. Discussions and Conclusions

Investment behavior is an advanced part of behavioral finance which elaborates that how the decision-making process such as collecting the information, and understanding the situation expected, explored and evaluated by an investor. As traditional theory embraces that sometimes the investors may aimlessly over respond or under respond to the market situations and behave irrationally in constructing their decisions regarding investment. This irrationality is persuaded by different reasons, one of the main reasons is human behavior. The human behavior is obsessed by emotional, cognitive, psychological, availability and representative biases which leads to irrationality in their investment behaviors. Psyche and emotions are the main factors causing biases in IDM. Investors are inclined to many illusion, errors and biases while making investment decisions. These biases and errors are called heuristics; causing severe errors in investors decisions which leads them to behave irrationally. The current study focuses on three heuristics commonly used in IDM; AB, RB and PB and analyzes the moderating role of LC in the association between IDM and three biases; AB, RB and PB.

The findings show that AB has significant positive impact on IDM. 1% increase in the level of AB leads to improve the irrationality in IDM by 37.4% which means that more the investors have AB, the highly irrational they are in the process of decision making. RB also has significantly positive effect on irrationality of decision making by the investors. An inclination in the level of RB leads to enhance the irrationality of investor’s decision making by 14.7%. Conclusively, there is significant positive impact of RB and AB on IDM, hence, accepting H₁ and H₂. The outcomes are similar with prior studies (Bashir et al., 2013; Waweru et al., 2008). The findings confirm that Pakistani investors are influenced by the various behavioral factors. The study of such factors provides greatest insight to understand the behavior of Pakistani investor. The results imply that decisions made by Pakistani investors are driven by the most easily or currently available information and they trust on the information obtained from family and friends without any authentication and verification. The study could not find any moderating role of LC. One possible description of insignificant moderation effect of LC can be the sample

traits used in the study, e.g., personal characteristics, that change from culture to culture. Another description of these findings may be the association between heuristic biases, including RB, AB, and PB and decision-making regarding investment is not personality specific. Investors may rely on the shortcuts of mental gained through experience and knowledge.

5.1. Practical Implications

The current study affirms and explains the causes for the stock market deviation from standard rational behavior as described by the existing financial models, which claims that behavioral biases (such as AB, RB, PB) influence the investors which lead investors to deviate from rational behavior. The current study helps in explaining the different phenomenon that traditional study fails to describe, such as herding behavior, focusing on a specific and popular stock, underpricing and overpricing etc. Hence, providing a deep understanding of real-life behavior of investors. The study helps investors as well as investment managers to best understand their own behavior by “keeping in mind the factors affecting their decision deviate from decisions of wealth maximization.” The study helps investors to analyze and consider information available to them, more effectively before taking investment decision. In order to avoid the biases’ effect and to improve decision making, awareness and training on behavior factors should be provided. The findings also help investment firms seeking to understand and analyze the trends of market in a highly rigorous way and give consultancy of reliable information on the basis of real-life behavior of investors. The study also helps policy makers in understanding the investors and devising policies that keep in view the above said psychological factors to ensure the market’s smooth running. The results also imply that decisions made by Pakistani investors are driven by the most easily or currently available information and they trust on the information obtained from family and friends without any authentication and verification.

5.2. Recommendations

The investors use stereotyped or similar information while making investment decision regarding investment and prefer to purchase local stock. Pakistani investors, because of the impact of these biases, “wrongly believe that stocks of well reputed firms lead to higher returns. These heuristics lead investors to fail to diversify their portfolio. The current study, therefore, recommends investors to evaluate the degree of bias they themselves have, and then to make financial decisions by keeping that in mind.” After examining information from stock market, they should dually verify the figures and facts.

5.3. Limitations and Future Directions

The study is limited to analyze the effect of just three biases; AB, RB and PB. The future researchers may enhance the current study’s scope by considering other relevant biases in the model. The existence of females in the study sample is very low, the future studies should incorporate adequate representation of females in order to get more accurate results.

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