



Impact of herding on individual investor's investment decision

Kaleem Ullah*, University Institute of Management Sciences, PMAS-Arid Agriculture University Rawalpindi, Pakistan & Ph.D. Scholar Department of Management Sciences Islamia College Peshawar, Pakistan, kullah@ymail.com ORCID:

<https://orcid.org/0000-0001-8997-7384>

Shahid Jan Kakakhel, Department of Management Sciences Islamia College Peshawar, Pakistan, shahidjan@icp.edu.pk

ABSTRACT- The presumption of the rationality of conventional finance has long been questioned by behavioral finance. Recently many non-financial factors including human personality traits and social environment surrounding decisions to be made have emerged. In this study, the influence of selected behavioral biases on investment decision-making is done. Data was collected through a questionnaire, circulated to a representative sample (n=475) of Pakistani stock exchange investors. In this study descriptive stat, correlation and regression are used for analysis. Our results show that behavioral biases significantly affect the investment decisions of an individual investor. Theoretically, the research advocated the inclusion of herding in investment decisions. Results show that investors understand their emotional influences while growing self-control and investment analysis skills. Further analysis can use psychological bias and other accounting data metrics such as Earning per Share (EPS) to assess herding behavior in investment decision-making, along with the prejudices faced by investors when making investments.

Keywords: Behavioral finance, herding behavior, investment decision

I. INTRODUCTION

There is plenty of research available on analyzing investors' investment decision behavior. Studies indicate that the curiosity of researchers that how investors make investment decisions; however, much of the researches has been focusing on investigating only the effect of psychological factors on investment decision of investors (Xu & Wan, 2015). When we talk about human beings, they act irrationally for their decisions about investing. In order to become effective investors in the stock market, right, natural and logical patterns of conduct are absolutely necessary. But it is very rare or close to non-existent that investors follow a typical pattern of decision-making and reasonable action with a decision always in their favor, with gains and profits only (Zahera & Bansal, 2018). Investors other than the personal information have the public information used by others which are termed as "information cascades". In financial markets, a cascade of information begins when investors ignore their private data and copy others. In developed countries, comprehensive research has been performed to explain the effect of herd activity on the stock market (Sharma & Kumar, 2019). According to Nalurita (2020) though there is scarce evidence from developing nations. Most of the current studies in Pakistan are survey-based and mainly recognize behavioral biases that influence investors at the time of decision-making. However, they are either ineffective or inconclusive to clarify the effect on the stock market of any particular behavioral bias. Using this knowledge induces a psychological propensity to blindly follow others while investing. There are many explanations why, without knowing whether it is reasonable or irrational, people go for behavioral herding. The conduct of herding appears to be independent of the personal decision-making process but essential to the atmosphere and business environment (Lin 2011).

Tversky and Kahneman, (1992) revealed three heuristics used to make decisions under the representation, availability, and anchoring of uncertainty. There are several social factors, apart from psychological factors, that have a key role in deciding investor behavior. In this research, herding has been selected as a social factor and its ultimate impact on investor's investment. Investment decision contributes towards the growth of the stock market and in turn results in enhanced confidence of local as well foreign investors (Sharma & Kumar, 2019). The identification of the cluster of core factors is critical for the performance of the stock market individual investors. Because of the inefficient nature of the trading operations in Pakistan, the lack of education and training in the activities and functions of the stock market, the lack of knowledge of the trading

activities of securities and stocks on the market, and the ability to buy and sell the shares exchanged on the market, for the majority of individual investors, poses many problems. A cluster of variables based on logical and behavioral factors that affect the individual investor's investment decision-making must be generated significantly (Zahera & Bansal, 2018).

Investment decisions are perceived to be critical activities in our everyday lives as a result of the global financial crisis (2007-2008). Various factors that assist individual investors to make investment decisions need to be understood. Researchers have focused in different ways on the actions of investors and the agents who are actually supervising investments. Nevertheless, the existence of psychological factors and the actions of individuals is under debate at the time of investment decision-making. Yan et al., (2020) reported some limitations and he suggested that the role of psychological factors along with demographic factors need to be tested to assess their impact on investor behavior, such as decision-making, in future research. On the topic such as psychology and investment decision studies have been conducted with mixed findings in the established literature. On the other hand, there has been very little work on herding and its impact on the investor's investment decision-making. The present research is focused on the social psychology of investors as well as the personal values of the investors which alter their neutral view of investing. This study can have critical importance in the field of finance investigating the relationship between different factors that can influence the general investment decision of the investors.

There are some social factors that have a key role in determining investor behavior such as herding. In this research, we have selected herding as a social factor and its ultimate impact on investor's investment. Hirshleifer, and Hong Teoh (2003) stated the possible effect of the hubs in the stock markets by discussing the influence of so-called 'anchors' in the stock market. They are experts in the markets who give advice on investment decisions. Investors generally rely on such hubs before they make any final choice. Social networks do favor an investor's investment decision-making at the time when they are uncertain about what they should choose; this is the informative role of the social network. This uncertainty is gained due to a lack of information and other factors. Herding is also one of the most significant social factors affecting investment choices. Sherif (1966) refers to herding as a person or institutional activity that blindly follows most people's choices and information rather than relying on their own collection of information or critical thought. This is to believe more than you do in others, without knowing what is wrong and what is true. Sias (2004) therefore describes herding as the propensity of investors to pursue each other into the same stocks and out of them. This can be individual investors as well as institutional investors. It proposes that people make investment in securities where most of the people are investing. Common knowledge is when investors use the same information as others are using.

Hadady and Puryandani (2015) in Indonesia examined the herding behavior in the stock exchange and the variables were based upon the two models of Christie & Huang, 1995 and Chang et al., 2000. The findings of the research revealed that no type of herding behavior was found in the Jakarta exchange regarding the investigated models of this research. The study carried out by Youssef and Rajhi (2009) observed different parameters of herding and their effects on investment behavior. Their work made known visibly that investors with more knowledge and experience relied on the information they possess more than the other's behavior and gave due consideration to their particular situation. On the other hand, the less experienced and with the low level of knowledge investors followed the herd because they couldn't take any chance of errors. So, the study proposes that:

H1: The social factor herding negatively relates to the investment decision

There is scarce literature that discusses the relationship of herding with investment decision-making. The current literature discusses the relationship between the above-mentioned investment decision-making variable. This study is unique in the sense that it extends the search for an investment decision-making model in the context of herding. In the Pakistan situation, although studies have been performed, there is still a collective inclusion of many variables. Adding all these variables together in this study would help much benefit investors may get when making their financial choices from each of these independent variables.

II. METHODS

Research Design

For the purpose of quantitative data, the authors adapted a survey questionnaire comprised of demographic characteristics of respondents such as; gender, age, investment experience, education, and income. The demographic variables have a significant influence on investment behavior and behavioral errors (Kumar &

Goyal, 2015). The second section asks about the main variables of the research. Likert scale questionnaire was used for data collection. In the questionnaire other than the effects of variables on each other based on individual investors the demographic details were also mentioned like gender, age, experience, and education to know the results in substantiation of these demographics. The feedback from the respondents through this questionnaire was analyzed and results were obtained by processing the data through different techniques and methods.

Participants

The sample of the present study was taken from the investors of the Pakistan Stock Exchange who came across the biases concerned in this research while taking their investment decisions. The sample of the study was 475 investors of the Pakistan Stock Exchange. A purposive sampling technique was used in order to have a sample. Individual investors having traded in the PSX were the target population of the study. The PSX comprises the brokerage houses so the purposive sampling technique used was appropriate for sample selection. Hence it was used for data collection.

Data Collection Tool

The questionnaire items measuring the investment decision are obtained from Qureshi (2012). There are five items used in it regarding decision making. On the other hand, the questionnaire considering the effect of herding on individual investor behavior is taken from (Scharfstein & Stein, 1990) which comprises five items related to herd behavior in the stock market. The measurement instrument's reliability (internal consistency) is tested through Cronbach's Alpha. The internal consistency is also tested through composite reliability. Convergent validity is applied in this study on the latent variables to extract the average variance. Discriminant validity is also processed in order to check the difference between the latent variables. The descriptive analysis allowed us to know the health of the collected data. For the analysis, structural equation modeling (SEM) methodology is used to reach conclusions about the study hypothesis.

III. RESULTS

First of all, the internal consistency (reliability) of the theoretical model is calculated. Two criteria were used to ensure the internal consistency of each latent variable i.e. Cronbach's alpha and composite reliability. Cronbach's alpha is the first criterion to find out the internal consistency. Cronbach's alpha provides an estimation of reliability by using the correlation between variables with the assumption that equal reliability exists among all variables. Results showed that Cronbach's alpha of all latent variables ranged between 0.574-0.911. This showed that all latent variable has high internal consistency as Cronbach's alpha is higher than 0.50 as recommended by (Fornell & Larcker, 1981).

Composite reliability is the second criterion for finding the internal consistency of all latent variables. The outer loading is used by composite reliability (CR) to check the internal consistency of all variables. In CR, the accuracy of the constructs is stated, while AVE calculates the amount of variance assigned to the construct compared to the amount due to measurement error. For each construct, composite reliability is measured and then compared with the cut-off value of 0.6 (Bagozzi & Yi, 1988). Results showed that the composite reliability of latent variable has high internal consistency as composite reliability is higher than 0.70 as recommended by (Arnold & Reynolds, 2003).

To test the correlation between all observed variables of the same variable, convergent validity can be used. For finding convergent validity of latent variables, average variance extracted (AVE) is used. Results showed that the convergent validity of all latent variables ranged between 0.511-0.849. Convergent validity was analyzed in terms of AVE, using a cutoff point of .50 (Pirson & Malhotra, 2011). This showed that all latent variables have high convergent validity as AVE is higher than 0.50 thresholds. Results of convergent validity of each latent variable are presented in Table 1.

Discriminant validity finds out the difference among all latent variables. Discriminant validity was evaluated by comparing the values of the AVE with the square of the correlation between the factors. According to Fornell & Larcker (1981), an AVE that is higher than the coefficient of the correlation between factors provides evidence of discriminant validity.

Table 1. Results of Cronbach's Alpha, Composite Reliability and Convergent Validity

Construct	Cronbach's Alpha	Construct Reliability	Convergent Validity
Herding	0.867	0.904	0.653

Investment Decisions	0.574	0.776	0.542
----------------------	-------	-------	-------

The results showed that the average extracted variance of the square root is greater than the correlations between latent variables. Results have been listed in the table 2.

Table 2. Discriminant Validity (Fornell-Larcker Criterion)

Construct	Herd	Inv_Dec
Herding	0.808	
Investment Decision	-0.442	0.736

*The highlighted diagonal values shows the square root of AVE

Descriptive Statistics

Herding

Table 3 below shows the 475 responses of the respondents for the current study variable that is herding. It shows that how the individuals fall prey to herding behavior by blindly following others. For the first item of the variable herding 142 of the 475 respondents strongly disagree, 178 disagree, 68 respondents agree, 44 were strongly agreed, whereas only 43 are neutral on this. For the second item for herding 97 of the responses out of 475 strongly disagree, 172 disagree, 91 agree, 41 strongly agree and 74 are neutral. The third item for this variable got 475 responses out of which 149 respondents strongly disagree, 115 disagree, 108 agree, 51 strongly agree, and 52 are neutral. The fourth item shows 66 of the responses strongly disagree, 244 disagree, 86 agree, 38 strongly agree and 41 are neutral. The fifth item shows 73 of the responses strongly disagree, 211 disagree, 93 agree, 63 strongly agree and 35 are neutral. The above table also shows the mean values of all the five items of the herding variable representing the positive or negative responses of the respondents. The mean values against five items of herding are 2.36, 2.59, 2.57, 2.55, and 2.71 respectively. This shows that the responses from the investors for all the five items of herding are positive as the values of the means are positive.

Table 3. Descriptive Statistics and Frequency Distribution with respect to Herding

Items	Item-wise Frequency and Descriptive Statistics (N=475)						
	SD	D	N	A	SA	Mean	Std. Dev.
HERD_1	142	178	43	68	44	2.36	1.293
HERD_2	97	172	74	91	41	2.59	1.247
HERD_3	149	115	52	108	51	2.57	1.405
HERD_4	66	244	41	86	38	2.55	1.171
HERD_5	73	211	35	93	63	2.71	1.306

Note: SD is strongly disagree, D is disagree, N is neutral, A is agree and SA is strongly agree

Investment Decision

Table 4 below depicts 475 responses of the respondents for five items of the current study variable that is Investment Decision. There are different reactions of investors that come out from this when they are taking Investment Decisions. For the first item of the variable Investment Decision 55 respondents strongly disagree, 155 disagree, 133 respondents agree, 46 were strongly agreed, whereas 86 are neutral on this. For the second item of Investment Decision 71 out of 475 respondents strongly disagree, 96 disagree, 206 agree, 58 strongly agree and 44 are neutral. The third item for Investment Decision got 475 responses out of which 72 of the respondents strongly disagree, 104 disagree, 171 agree, 54 strongly agree, and 74 are neutral. The fourth item for Investment Decision got 48 responses to strongly disagree responses out of 475, 81 disagree, 150 agree, 67 strongly agree and only 129 are neutral on this. For the fifth item of Investment Decision out of a total of 475 responses 43 strongly disagree, 76 disagree, 176 agree, 54 strongly agree and 126 were neutral. The above table also shows the mean values of all the five items of the Investment Decision variable representing the positive or negative responses of the respondents. The mean values against five items of Investment Decision are 2.92, 3.18, 3.07, 3.23, and 3.26 respectively. All the mean values for Investment Decisions are positively indicating positive responses from the investors.

Table 4. Descriptive Statistics and Frequency Distribution with respect to Investment Decision

Items	Item-wise Frequency and Descriptive Statistics (N=475)						
	SD	D	N	A	SA	Mean	Std. Dev.
Investment Decision1	55	155	86	133	46	2.92	1.205
Investment Decision2	71	96	44	206	58	3.18	1.302
Investment Decision3	72	104	74	171	54	3.07	1.280
Investment Decision4	48	81	129	150	67	3.23	1.186
Investment Decision5	43	76	126	176	54	3.26	1.133

Note: SD is strongly disagree, D is disagree, N is neutral, A is agree and SA is strongly agree.

Correlation Analysis

Table 5 below indicates the correlation matrix. As it can be seen from the correlation matrix, herding carries a moderate association with investment decision.

Table 5. Correlation Analysis

Variable	Herding	Investment Decision
Herding	1	
Investment Decision	.395**	1

The herd is the exogenous and latent variable of this research which is denoted as “HERD”. According to Sherif (1966) Herd measured the behavior of individuals or institutions that blindly follows the decisions and information of the majority of the people rather than relying on their own set of information or rational thinking. The herd is measured through 5 items. The herd was analyzed through these five items. Herd comprised on the mean score of five items and denoted as HERD.

In this study, the endogenous variable (dependent variable) was Investment Decision. Investment Decision is the dependent variable of this research which is denoted as “INV_DEC”. Investment Decision according to (Avram et al., 2009) measured the decision or an expense made now to make gains in the future. The Investment Decision was measured through five items Outer loading of two items were lower than 0.5 that’s why omitted. So, Investment Decision was analyzed through three items. Investment decision was analyzed through these three items. Investment Decision comprised on the mean score of three items and denoted as “INV_DEC”.

Path Coefficient of Structural Model

Following are the research hypotheses that were tested through the structural model.

H₁: The social factor herding negatively relates to the investment decision

In the second hypothesis, it was hypothesized that herding negatively relates to the investment decision. Since P-Value is 0.446 greater than $p > 0.05$ not meeting the criterion for acceptance of hypothesis hence the hypothesis is rejected.

Table 6: Testing of Structural Model

Structural Path	Estimate	T Score	P
Herding -> Investment Decisions	0.008	0.135	0.446

Note: ** Represents significant at 1percent, whereas * represents significant at 5percent

IV. DISCUSSION AND CONCLUSIONS

The findings of the authors show that there is no evidence of herding in any market situation in the Pakistan stock market over a decade experiencing various market cycles, mainly due to the dominance of institutional investors and, secondly, due to the low market participation of individual investors. The study rejected the hypothesis that social factor herding negatively relates to the investment decision. Thus it can be concluded

in Pakistani society context, the herding positively relates to the investment decision. People in Pakistan, while deciding about an investment scenario, do ask their peers and try to imitate others usually their friends, family or acquaintances. This phenomenon refers to herd behavior. Sherif (1966) relates herding as a behavior of individual investors or institutional investors who follows the decisions and information of the majority of the people who already does the investment rather than relying on their own set of information or rational thinking. In other words, this is to believe on others more than self without going into reality of what is wrong and what is right. Sias (2004) accordingly defines herding as investors' tendency to follow each other into and out of the same stocks while subject to an investment scenario. Based on the previous studies this study is conducted concerning Pakistani context by considering the investors of Pakistan Stock Exchange. It is seen that investors here are also influenced by these biases with prominent difference of gender and experience. There are some factors which affect males more than females like anger, fear, herding and stress. On the other hand some factors affect females more than males like mood and social interaction. The model of the current study specifies that herding harm investor's investment decision. The other effects are same as being positive or negative in alliance with the previous research model and findings. In the current study, it is proposed that proper attention should be paid to the consequences of the prejudices that investors typically become victims of without being aware of. These prejudices have some significant consequences that can lead to serious investment breakdowns. While other psychological and social biases have both positive and negative effects, the negative aspects can be more cautiously viewed so that the potential outcomes can be more secure. An investor's success is highly dependent on the ability to learn and adjusts through viable investment strategies to dynamic market conditions. To promote the achievements of better investment results, stock exchanges periodically conduct educational program to enhance the financial literacy and awareness of investors. The results indicate that this learning program should be tailored to motivate them to learn by drawing on their own experiences. Consequently, they would be able to learn quickly from their previous trading experiences, which decreased the sensitivity when trading stocks to behavioral biases.

REFERENCES

1. Arnold, M. J., & Reynolds, K. E. (2003). Hedonic shopping motivations. *Journal of Retailing*, 79(2), 77–95.
2. Avram, E. L., Savu, L., Avram, C., IGNAT, A. B., Vancea, S., & Horja, M. I. (2009). INVESTMENT DECISION AND ITS APPRAISAL. *Annals of DAAAM & Proceedings*.
3. Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, 16(1), 74–94.
4. Fornell, C., & Larcker, D. F. (1981). *Structural equation models with unobservable variables and measurement error: Algebra and statistics*. Sage Publications Sage CA: Los Angeles, CA.
5. Hadady, H., & Puryandani, S. (2015). Release of Sbi Interest Rate and Stock Trading Volume on the Herding Behavior of Indonesian Investors. *Room A*, 140.
6. Hirshleifer, D., & Hong Teoh, S. (2003). Herd behaviour and cascading in capital markets: A review and synthesis. *European Financial Management*, 9(1), 25–66. <https://doi.org/10.1111/1468-036X.00207>
7. Kumar, S., & Goyal, N. (2015). Behavioural biases in investment decision making—a systematic literature review. *Qualitative Research in Financial Markets*.
8. Lin, H. (2011). Elucidating rational investment decisions and behavioral biases: Evidence from the Taiwanese stock market. *African Journal of Business Management*, 5(5), 1630–1641. <https://doi.org/10.5897/AJBM10.474>
9. Nalurita, F., Leon, F. M., & Hady, H. (2020). *Factor Influencing Investor's Decision Making in Indonesia: Moderating the Role of Locus of Control*.
10. Pirson, M., & Malhotra, D. (2011). Foundations of organizational trust: What matters to different stakeholders? *Organization Science*, 22(4), 1087–1104.
11. Scharfstein, D. S., & Stein, J. C. (1990). Herd behavior and investment. *The American Economic Review*, 465–479.
12. Sharma, A., & Kumar, A. (2019). A review paper on behavioral finance: study of emerging trends. *Qualitative Research in Financial Markets*, 12(2), 137–157. <https://doi.org/10.1108/QRFM-06-2017-0050>

13. Sherif, M. (1966). *In common predicament: Social psychology of intergroup conflict and cooperation*. Houghton Mifflin.
14. Sias, R. W. (2004). Institutional herding. *The Review of Financial Studies*, 17(1), 165–206.
15. Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5(4), 297–323.
16. Xu, F., & Wan, D. (2015). The impacts of institutional and individual investors on the price discovery in stock index futures market: Evidence from China. *Finance Research Letters*, 15, 221–231.
17. Yan, R., Basheer, M. F., Irfan, M., & Rana, T. N. (2020). Role of Psychological factors in Employee Well-being and Employee Performance: An Empirical Evidence from Pakistan. *Revista Argentina de Clínica Psicológica*, 29(5), 638.
18. Youssef, M., & Rajhi, M. T. (2009). Determinants of Herding Behavior among Financial Analysts: A Study of French Listed Firms. *International Journal of Business and Management*, 4(9), 121–130. <https://doi.org/10.5539/ijbm.v4n9p121>
19. Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*, 10(2), 210–251. <https://doi.org/10.1108/QRFM-04-2017-0028>