Impact of Behavioral Factors on Investment Decisions and Performance: Evidence from Pakistan Stock Exchange

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Abstract

Market irregularities and investors' irrational behavior stimulates fluctuations in the stock market. Thus, it is important to examine the impact of behavioral factors on investment performance. However, we found a limited number of studies on the effect of behavioral factors on investors' decision-making. Therefore, we empirically tested a new model which examines the impact of herding, heuristics, market, and prospects on investor decisions at the Pakistan Stock Exchange. Based on a sample size of 155 individual investors, the study concluded that behavioral factors correlate with investment decisions and investment performance. The study found that market and herding are positively associated with investment decisions. Our results also suggest that herding, market, heuristic, prospect and investment decision are significant precursors to investment performance. We also found that investment decisions mediate (i) market and investment performance, (ii) herding and investment performance. Both individual investors and institutional investors can benefit from this study by understanding the impact of behavioral factors on investors' decisions.

Keywords: *Heuristics, prospects, market, herding, investment performance, investors decisions.*

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Introduction

Predicting investors' behavior is always challenging. Investors' decisions depend on their psyche and perception of the market dynamics (Le-Luong & Thi–Thu-Ha, 2011). The economy of any country and the stock market have a positive correlation (Gay, 2008) which means an increase in the stock market will promote economic development (Laopodis & Papastamou, 2016). Investors' decisions and market trends are highly correlated. It is argued that investors' decisions influence both the stock market and the economy (Le-Luong & Thi-Hu-Ha, 2011). It is essential to examine how behavioral factors influence an individual investors decision-making process. Given its significance, the study examines the impact of behavioral factors on investment decisions. The findings of the paper will be helpful for both investors and securities firms. Thus, we have developed a new model with nine relationships, including two mediating relationships.

Literature Review and Hypothesis Development

The decision-making process of investors is associated with cognitive illusions. In other words, behavioral finance relates to investors' psychology and perceptions towards investment opportunities (Ritter, 2003). We now review the existing literature to analyze how behavioral factors affect investment decisions. Investors' psychology towards investment opportunities affects the financial market (De-Bondt & Thaler, 1995). If investors make rational financial decisions, the market will be less sensitive to speculation. Market factors include investor preference, price change, stock's past trend and market data (Waweru et al. 2008; Anderson, Henker & Owen, 2005). Investors under or overreact to market information, including fundamentals and stock price speculation. Many past studies have documented that market factors impact investor decision-making (Campbell, Ramadorai & Ranish, 2019; Michaely, Thaler & Womack, 1995).

Similarly, De-Bondt & Thaler (1995) and Lai, Low & Lai (2001) argue that news and speculations stimulate investors to over or under-react in the investment decision process. Many events in an economy affect the stock market and divert investors' attention. However, it is difficult to predict how these events may influence future stock performance (Barber & Odean, 2000). Investors' confidence stimulates stock trade. Their investment decisions depend on the quality of information about the market (Odean, 1998; Odean, 1999). The fluctuations in stock prices also affect trade at the stock exchange. Investors often sell and buy those stocks that have changed significantly in the last two years (Coval & Shumway, 2000). Investors' preferences also affect their investment decisions. Some investors make their purchase decisions based on the performance of a stock, while other investors may sell the stocks which perform poorly in the stock market (Lin & Swanson, 2003). Also, many investment decisions are based

on the past performance of stocks and technical analysis.

H1: Market factors positively influence investment decisions.

H2: Market factors positively influence investment performance.

H3: Investment decisions mediate market factors and investment performance.

Herding Effect

When investors under the influence of others make an investment decision, it is known as the herding effect. Usually, small investors' investment decisions are based on the herding effect (Choi & Sias, 2009). On the contrary, professional investors' investment decisions are not influenced by herding (Venezia, Nashikkar & Shapira, 2011). Demirer, Kutan & Zhang (2014) and Yao, Ma & He (2014) suggest that herding behavior is often found in a few sectors. Stocks that fluctuate sharply and frequently are more attractive for herd investors. The disposition effect also affects the quantum and value of the stock market. Under this phenomenon, investors sell the stocks whose prices have increased and keep the stocks whose value has declined (Lin & Lin 2014; Tan, Chiang, Mason & Nelling, 2008). The disposition effect is not the same for all investors (Frazzini 2006). Rational investors are less affected by the disposition effect than non-rational investors (Grinblatt, Keloharju & Linnainmaa, 2012). Waweru et al. (2008) suggest that herding enhances the momentum in the stock market. However, once a share value increases abnormally, the herding effect decreases. Due to the herding effect, investors often overestimate the value of a share, which affects their investment decisions (Caparrelli et al. 2004).

H4: Herding positively affects investment decisions.

H5: Herding positively affects investment performance.

H6: Investment decisions mediates herding and investment performance.

Heuristic Theory

The heuristics theory provides guidelines to decision-makers that improve decision efficiency, especially in uncertain and difficult situations (Ritter, 2003). Besides its significance, it has certain biases (Waweru et al., 2008; Kahneman & Tversky, 1979; Ritter, 2003). Shah, Ahmad & Mahmood (2018) have found that heuristic biases negatively affect investment decisions.

Kahneman & Tversky (1979) argue that heuristics have three facets: anchoring, availability biases, and representativeness. Subsequently, Waweru et al. (2008) added two more facets to the heuristic, including overconfidence & gambler's fallacy. Rasheed, Rafique, Zahid & Akhtar (2018) suggest that heuristic factors are directly associated with investment decisions.

Representativeness

It is a bias that occurs "when the similarity of objects or events confuses people's thinking regarding the probability of an outcome." (De-Bondt & Thaler, 1995). Many investors often believe two events or similar things are closely related. This representativeness is known as processing error in behavioral finance theory. Ritter (2003) suggests that investors, while investing, ignore the average rate of return in the long term, which is an example of representativeness. Another example of representativeness biases is that investors often assume that a company's long-term growth rate increases profit for a few quarters (Shefrin & Statman, 1985). Overreaction is a phenomenon in which an investor ignores stocks that perform poorly and makes investments in stocks that perform well (De-Bondt & Thaler, 1995).

Gambler's Fallacy

Gambler's fallacy is a flawed assumption in which an investor thinks the previous series of events will give the same results. The flaw in this assumption is that it does not consider events as independent and believes that future results will be based on past events (Rabin, 2002; Statman, 1999; Barberis & Thaler, 2003). Often there is a huge variation in the market price of a stock and its real worth. Besides other factors, the gambler's fallacy contributes significantly to such variation in the stock prices (Waweru et al., 2008).

Anchoring

In anchoring, investors use irrelevant information for projecting the future value of a financial instrument (Kahneman & Tversky, 1979). Some irrelevant information could be emotional factors and other extraneous factors such as speculation and false beliefs (Kallinterakis, Munir & Radovic-Markovic, 2010). Investors often, due to anchoring, tend to hold investments that have lost their market value (Kempf & Ruenzi, 2006). This often happens when investors, while making investments ignore fundamentals. Consequently, in the long run, investors lose more by holding bad investments, hoping they will return to their original value. Due to anchoring bias, many investors make incorrect financial decisions, including buying undervalued investments or selling an overvalued investment (Waweru et al., 2008).

Overconfidence

It arises when investors are overconfident about their skills and knowledge (De-Bondt & Thaler, 1995; Hvide, 2002). Such overestimation leads to excessive buying resulting in a distorted portfolio. Overconfidence also causes investors to focus on areas in which they have the expertise and ignore other factors that affect the value of a stock (Evans, 2006; Kyle & Wang, 1997). Past studies have documented that professional performance and overconfidence are highly correlated (Oberlechner & Osler, 2012; Naik & Padhi, 2015).

Availability Biases

Investors tend to use readily available information, ignore the diversification of investment and prudent management of the portfolio (Waweru et al., 2008). Such a phenomenon is known as availability bias which impact future investment decisions (Waweru et al., 2008; Oberlechner & Osler, 2012).

H7: Heuristics positively influence investment performance.

Prospect Theory

Prospect Theory and Expected Utility Theory (EUT) help investors in their decision-making. The expected utility theory focuses on the rational expectations of investors, whereas the prospect theory helps investors in subjective decision making (Filbeck, Hatfield & Horvath, 2005). Kahneman & Tversky (1979) argue that EUT explains why investors are attracted to insurance and gambling. Investors' reactions in case of loss will be different, and in case of winning will be different (Kahneman & Tversky, 1979). Prospect theory suggests that an investment decision process depends on risk aversion, loss aversion and mental accounting (Waweru et al., 2008).

Regret Aversion

Adverse investment decisions stimulate negative emotions such as regret. Regret aversion affects holding stocks when their prices decrease and sell them when their prices are increasing (Fogel & Berry, 2006; Lehenkari & Perttunen, 2004).

Loss Aversion

Investors try to avoid loss in their investments (Barberis & Huang, 2001). Similarly, Barberis & Thaler (2003) found that investors focus on loss aversion rather than expected profit. Investors do not suffer if their investment gives profit some time and loss at another time. On the other hand, they will suffer if their investment continuously gives losses (Barberis & Huang, 2001; Lehenkari & Perttunen, 2004). Risk aversion is considered a general behavior among investors. However, excessive focus on loss

aversion can adversely affect investor wealth and investment decisions (Odean, 1998; Barber & Odean, 2000).

Mental Accounting

Mental accounting "refers to the different values a person places on the same amount of money, based on subjective criteria, often with detrimental results." (Barberis & Huang, 2001). Mental accounting assumes that individuals can make incorrect mental assessments which result in irrational decisions. Investors often make irrational decisions like investing in low-interest saving accounts and carrying large credit card debts (Ritter, 2003). Mental accounting emphasizes the "fungibility" of money (Goodfellow, Bohl & Gebka, 2009). It simply means irrespective of its origin or intended use, all money is the same (Barberis & Huang, 2001). To avoid mental accounting bias, investors should treat money the same whether they are allocated to an everyday expense account, a discretionary spending account, or a wealth account (Genesove & Mayer, 2001).

Similarly, individuals should treat a dollar the same way whether they have earned it or someone has given it to them (Ritter, 2003). Investors, while making investment decisions analyze different options on financial trading. This phenomenon is known as mental accounting (Barberis & Huang, 2001). The three prospect theory factors (i.e., regret aversion, loss aversion, and mental accounting) affect investment decisions (O'Brien, 2007). Thus we argue that

H8: Prospects positively influence investment performance.

H9: Investment decisions affect investment performance.

Conceptual Framework

The conceptual framework of the study is presented in Figure 1.
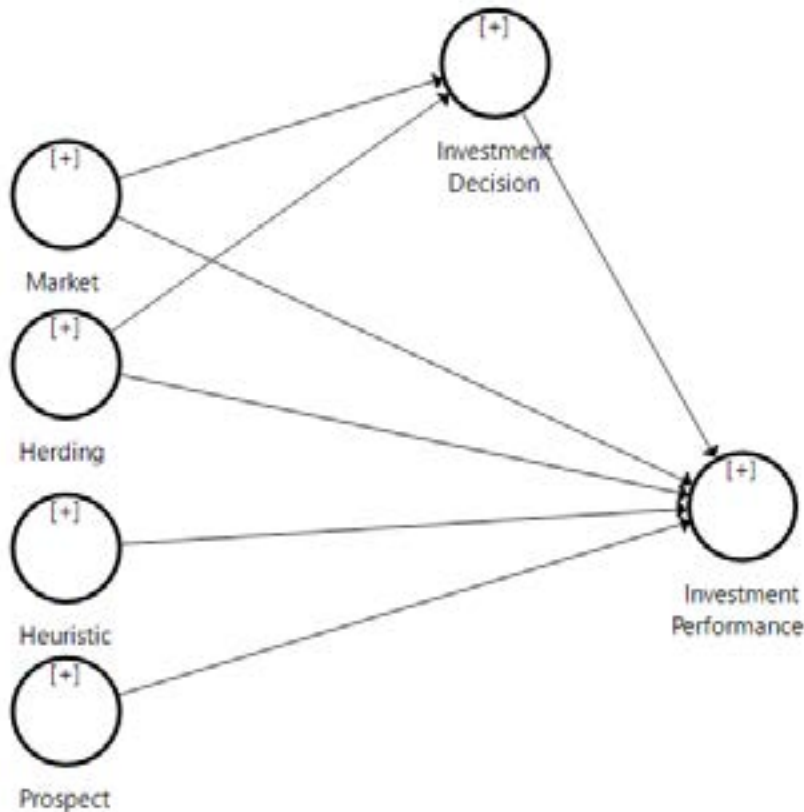
Figure 1: Conceptual Framework

Methodology

This research aims to examine the effect of behavioral factors on investment decisions and investment performance. The study has developed a new model that has seven direct and two mediating relationships. A self-administered questionnaire was used for collecting the data from the local investors in Pakistan. We distributed 300 questionnaires and received 155 responses.

Scales and Measures

We have used five constructs in the study. Three factors are related to behavioral aspects, including herding, heuristic, and prospects. The other two factors we have used

in the study are market and investment performance. All the questions in the study were based on the five-point Likert scale, where one represents strongly disagree, and five represents strongly agree (Fisher, Buglear, Lowry, Mutch & Tansley, 2010).

Table 1: Scales

Constructs	No of Items	Source
Herding	4	Alquraan, Alqisie & Al-Shorafa (2016)
Heuristic	8	Cao, Nguyen & Tran (2021)
Prospect	6	Cao, Nguyen &Tran (2021)
Market	6	De-Bondt & Thaler (1985).
Investment Performance	3	Cao, Nguyen & Tran (2021)
Invesment Decision	5	Shafi (2014)

Data Analysis

The collected data has been analyzed with the help of SPSS and Smart-PLS 3.0. Initially, we focused on importing the data in SPSS (Liu & Salvendy, 2009; Leech, Barrett & Morgan, 2005). Subsequently, data analysis was performed, including descriptive statistics and structural equation modeling (Gefen, Straub & Boudreau, 2000). SEM is a statistical technique that simultaneously tests all the casual relationships of a model (Anderson & Gerbing, 1988).

Results

Respondents

The questionnaires were distributed to individual investors at the Pakistan Stock Exchange. The valid sample size for the study was 155. The respondents' profile is discussed in the following section.

Table 2: Respondents Profile

	Frequency	%
Experience		
More than 10 years	20	13
5 to 10 years	7	5
3 to 5 years	37	24
1-3 years	45	29
Less than 1 year	46	29
Total	155	100
Age		
Above 55	6	4

46-55	3	2
36-45	25	16
26-35	99	64
18-25	22	14
Total	155	100
Gender		
Male	30	19
Female	125	81
Total	155	100
Course Attended in Stock Exchange		
Yes	47	30
No	108	70
Total	155	100

Reliability and Validity

In Table 3, we have presented the results related to the reliability and validity of the constructs.

Table 3: Reliability and Validity Analysis

	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Herding	0.796	0.809	0.881	0.713
Heuristics	0.814	0.82	0.877	0.641
Investment Decisons	0.876	0.877	0.91	0.668
Investment Perfromance	0.872	0.878	0.908	0.665
Market	0.825	0.835	0.884	0.655
Prospect	0.843	0.849	0.894	0.68

The results show that the Cronbach's alpha values ranged from 0.796 to 0.876. Also, the composite reliability values are greater than 0.70, and AVE values are greater than 0.60. Based on these results, we have inferred that the constructs used in the study fulfill internal consistency requirements (Helms, Henze, Sass, & Mifsud, 2006) and validity (Russell, 1978; Prószyński, 1994; Chin, Marcelin & Newsted, 2003).

Discriminant Validity

We have used the Fornell & Larcker (1981) criteria for assessing the discriminant validity of the constructs. The results are illustrated in Table 4.

Table 4: Discriminant Validity

	Herding	Heuristic	Investment Decision	Investment Performance	Market	Prospect
Herding	0.845					
Heruistic	0.433	0.801				
Investment Decison	0.43	0.705	0.817			
Investment Performance	0.539	0.646	0.619	0.816		
Market	0.583	0.586	0.588	0.742	0.81	
Prospect	0.227	0.36	0.372	0.386	0.392	0.824

The results suggest that all the correlation values are lesser than the AVE squared values, suggesting that the constructs used in the study are unique and distinct (Saunders, Lewis & Thornhill, 2009; Russell, 1978; Jum, 1978).

Confirmatory Factor Analysis

We performed confirmatory factor analysis to find the association between the constructs and their respective items (Shelby, 2011). The results are presented in Table 5.

Table 5: Exploratory Factor Analysis

	Herding	Heuristic	Investment Decision	Investment Performance	Market	Prospect
HER-1	0.751					
HER-2	0.907					
HER-3	0.868					
HER-4	0.798					
HEU-1		0.858				
HEU-3		0.772				
HEU-5		0.815				
HEU-7		0.755				
HEU-8		0.765				
ID-1			0.836			
ID-2			0.838			
ID-3			0.836			
ID-4			0.786			
ID-5			0.789			
IP-1				0.761		
IP-2				0.855		

IP-3	0.878		
MK-1		0.769	
MK-3		0.771	
MK-4		0.845	
MK-5		0.85	
MK-6		0.809	
P-1			0.797
P-2			0.831
P-4			0.858
P-5			0.81
P-6			0.802

We dropped six items as their factor loadings were less than 0.60 (Harrington, 2009; Hair et al., 2014). The details of the dropped items are (i) three items from the heuristic scale, (ii) one item from market scale, (iii) one item from prospect scale (iv) one item from market scale. Thus, we have inferred that "a relationship between observed variables and their underlying latent constructs exists." (Sun, 2005; Pervez & Grønhaug, 2010).

SEM Results

This study has applied structural equation modeling (SEM) for statistical analysis. It is now commonly used in social science studies (Anderson & Gerbing, 1988; Bandalos, 2002). It allows researchers to test direct and indirect relationships in one model. The fit indices of the model are also within the prescribed limit. SRMR (Standardized Root Mean Square Residual) value is 0.0607, and NFI (Normed Fit Index) is 0.8355, which are acceptable (Hu & Bentler, 1999; Sarstedt, Ringle, Henseler & Hair, 2014). The results related to hypotheses are illustrated in Table 6 and the measurement and structural models in Figures 2 and 3, respectively.

Table 6: SEM Results

Hypotheses	Beta	T Stat.	P Values	Result
Market -> Investment Decision (H1)	0.511	14.411	0.000	Accepted
Market -> Investment Performance (H2)	0.448	15.642	0.000	Accepted
Market -> Invest. Decision -> Invest.Per(H3)	0.066	3.849	0.000	Accepted
Herding -> Investment Decision (H4)	0.132	3.576	0.000	Accepted
Herding -> Investment Performance (H5)	0.113	4.504	0.000	Accepted
Herding -> Invest. Decision -> Invest Per (H6)	0.017	2.587	0.010	Accepted
Heuristic -> Investment Performance (H7)	0.224	8.424	0.000	Accepted
Prospect -> Investment Performance (H8)	0.056	2.587	0.010	Accepted
Investment Decision -> Investment Per. (H9)	0.128	4.045	0.000	Accepted

The results show that the t-statistics of all the coefficients are greater than 1.96, and p-values at the 95% confidence level are less than 0.05. Thus, our results support all the seven direct hypotheses and two mediating hypotheses.

Figure 2: Measurement Model
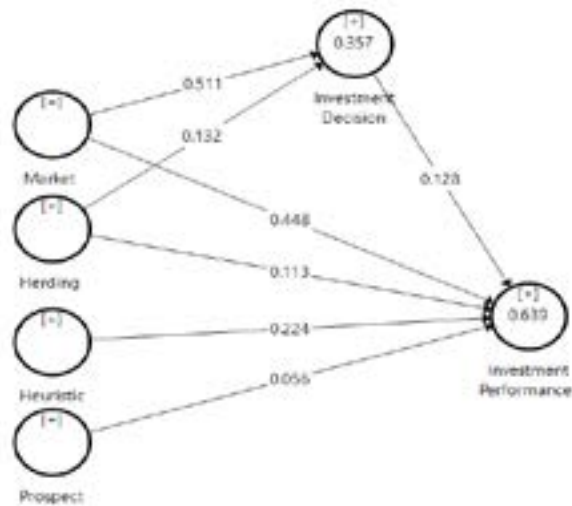
Figure 3: Structural Model
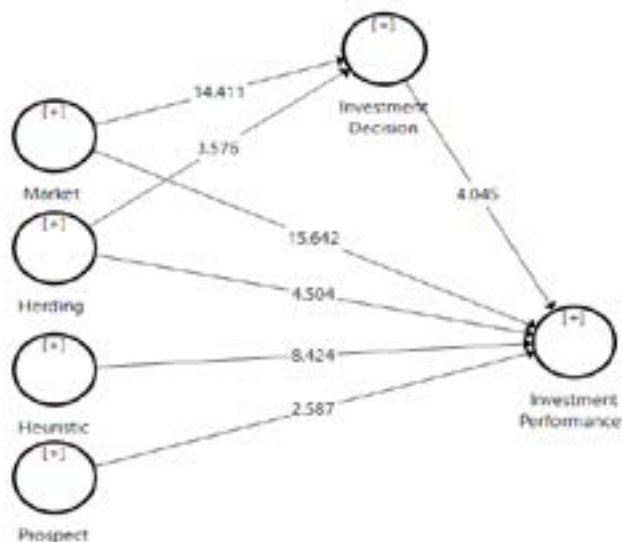
Discussion and Conclusion

This study has examined the impact of behavioral factors on investment performance and investment decisions and the mediating role of investment decisions. The study found that market and herding are positively associated with investment decisions. Our results also suggest that herding, market, heuristic, prospect investment decision are significant precursors to investment performance. We also found that investment decisions mediate (i) market and investment performance, (ii) herding and investment performance. We found all the relationships were significant and consistent with earlier studies (Kahneman & Tversky, 1979; Kengatharan & Kengatharan, 2014; Wamae, 2013). This study helps understand how behavioral factors affect the decisions related to the investments made by the individual investors of the Pakistan Stock Exchange. Most of the studies available on the Pakistan Stock Exchange have used traditional finance factors in their model. Contrarily, this study has examined the impact of behavioral finance factors on investment performance. Previous studies have used only a limited number of behavioral factors. For example, Shah, Ahmad & Mahmood (2018) and Parveen & Siddiqui (2018) mainly focus on the heuristic effect and overconfidence. The results suggest that researchers in Pakistan can understand Pakistan's stock market investment trends based on behavioral factors. Previous studies have measured investors' performance based on secondary data (Kim & Nofsinger, 2008), whereas this study has collected investors' primary data based on a five-point Likert scale questionnaire. Besides individual investors, institutional investors can also benefit from the study. The investors in Pakistan follow other investors while making stock investments. The investors in Pakistan do not have easy access to reliable information, and they are not mature. Many individual investors in Pakistan make their decisions not on fundamentals but speculation and rumors. Therefore, both professional and individual investors should educate themselves by attending workshops and seminars on behavioral finance.

The study's findings are important for individual investors, financial advisors, companies, and the government. Investors need to understand how behavioral factors affect their future investment plans. Corporations can develop their future strategies by understanding what motivates investor behavior. Financial consultants can use this study to suggest the best investment options for their clients. Thus, the study can have substantial practical benefits for individual investors, brokerage firms, and other stakeholders.

Limitations and Future Research

The sample size for the study was small, considering the objective of the study. Future studies can collect a larger sample to increase the generalizability of the results. We selected the respondents non-randomly. Future studies can select respondents

investing in different sectors of the economy. This study has collected only primary data. Other studies can base their studies on both primary and secondary data. This study was limited to the investors at the Pakistan Stock Exchange. A comparative study between investors of developed and developing countries may give further insight into the phenomenon of behavioral finance. This study has only focused on individual investors. Other studies can also focus on corporate investors.

<div align="right">**Annexure-1**</div>

Constructs and Items used in the Questionnaire

Heuristic

You buy 'hot' stocks and avoid stocks that have performed poorly in the recent past.

You use trend analysis of some representative stocks to make investment decisions for all stocks that you invest.

You believe that your skills and knowledge of the stock market can help you to outperform the market.

You rely on your previous experiences in the market for your next investment.

You forecast the changes in stock prices in the future based on the recent stock prices.

You are normally able to anticipate the end of good or poor market returns at the Pakistan Stock Exchange.

You prefer to buy local stocks than international stocks because the information of local stocks is more available.

You consider the information from your close friends and relatives as a reliable reference for your investment decisions.

Prospect

After a prior gain, you are more risk-seeking than usual?

After a prior loss, you become more risk-averse.

You avoid selling shares that have decreased in value and readily sell shares that have increased in value.

You feel more sorrow about holding losing stocks too long than about selling winning stocks too soon.

You tend to treat each element of your investment portfolio separately.

You ignore the connection between different investment possibilities.

Market

You consider carefully the price changes of stocks that you intend to invest in.

You have the over-reaction to price changes of stocks.

Market information is important for your stock investment.

You put the past trends of stocks under your consideration for your investment.

You analyze the companies' customer preference before you invest in their stocks.

You study the market fundamentals of underlying stocks before making investment decisions.

Herding

Other investors' decisions of choosing stock types have an impact on your investment decisions.

Other investors' decisions of the stock volume have an impact on your investment decisions.

Other investors' decisions of buying and selling stocks have an impact on your investment decisions.

You usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market.

Investment Performance

The return rate of your recent stock investment meets your expectation.

Your rate of return is equal to or higher than the average return rate of the market.

You feel satisfied with your investment decisions in the last year (including selling, buying, choosing stocks, and deciding the stock volume.

Investment Decisions

Your investment decisions in the stock market depends on market factors.

Your investment decisions in the stock market depends on price changes of stocks.

Your investment decisions in the stock market depends on received market information.

Your investment decisions in the stock market depends on the past stock trend.

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