Behavioral Factors on Individual Investors’ Decision Making and Investment Performance: A Survey from the Vietnam Stock Market

Minh Man CAO¹, Nhu-Ty NGUYEN², Thanh-Tuyen TRAN³

Received: November 05, 2020 Revised: January 30, 2021 Accepted: February 16, 2021

Abstract

The stock market shows the current health of an economy, and investment performance represents it. This study aims to clarify the relationship between financial behavior and investment decisions as well as its impact on investment results. Determine the influence of behavioral factors on individual investors’ investment decisions and investment performance on the Vietnam stock market. The study surveyed 250 investors. The main analytical methods used are Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). Research results show that Heuristic, Prospect, Market, and Herding directly and positively affect investment decision-making. Besides, the above factors have a direct and positive effect on investment performance. In particular, the Prospect factor has the strongest influence on investment decision-making and investment performance. The major findings of this study suggested that the important role of Heuristic, Prospect, Market, and Herding on Investment Decision-making and Investment Performance. Prospect had the strongest impact on Investment decision-making ($β = 0.275$). Heuristic had the second strongest impact ($β = 0.257$), then Herding ($β = 0.202$), and finally Market ($β = 0.189$) had the weakest effect. Regarding Investment Performance, the Prospect factor has a higher degree of impact than Heuristic Herding and Market.

Keywords: Behavioral Finance, Heuristic, Prospect, Herding, Investment Decision Making, Investment Performance

JEL Classification Code: M3, M14, M37

1. Introduction

The study of behavioral finance, particularly the behavioral factors affecting individual investment decisions in Asia, has many practical implications; therefore, the study of behavioral determinants of personal investment offers individual investors strategies to adjust their behaviors (Dang & Tran, 2019; Nguyen & Tran, 2019). Although it has been exploited for decades, behavioral finance is still a new topic and has not received much attention from analysts and investors. This study aims to clarify the relationship between financial behavior and investment decisions as well as its impact on investment results.

The study research questions are as follows: What are the main factors of behavioral finance that affect investment decision-making and investment performance? How strongly do they affect investment decision-making and investment performance?

Individual investors on the Vietnam Stock Exchange are the subjects of this study. Determine the influence of behavioral factors on individual investors’ investment decisions and investment performance on the Vietnam stock market.

2. Literature Review

2.1. Heuristic variables

Many studies reported that heuristics is an important component of decision making based on the rules of thumb
(Jay & Perkins, 1997). However, there are many studies asserting that heuristics creates various biases in complex situations. Heuristics plays a critical role when having to make urgent decisions in a limited time (Chand & Runco, 1993). The following biases have been reported by Benartzi and Thaler (2007): representativeness bias, overconfidence, availability bias, anchoring bias, and gamblers’ fallacy.

2.1.1. Representativeness

According to Tversky and Kahneman (1974), representativeness bias involves judging the probabilities based on stereotypes rather than analyzing the essential characteristics of a decision task. Representativeness can also impact the purchase of new stock. Mokoaleli-Mokoteli et al. (2009) stated that financial analysts are weighing both behavioral bias and potential conflicts of interest in their new buy-stock recommendation decisions.

2.1.2. Overconfidence

According to Russo and Schoemaker (1992), overconfidence occurs when someone believes in their knowledge and judging abilities without any recommendations from other people. Overconfidence refers to overestimating the probability of being right. It is the tendency for individuals to overestimate the correctness of their initial assessment of a particular situation and are reluctant in reviewing their initial assessment as a result of overconfidence. Overconfidence bias is a combination of both individual and related factors like individual age external equity (Bhutta & Shah, 2015).

2.1.3. Anchoring

Anchoring bias, as heuristic-driven bias is an assessment method. Anchoring bias occurs when people rely too much on pre-existing information or the first information they find when making decisions. The investor first considers initial existing values, a result of some partial calculation or the thought of itself, before making a final decision (Tversky & Kahneman, 1974). Many experiments showed that the combination of anchoring bias and representative bias will help investors focus on more observations, experiences, and financial behaviors to adjust decisions when there is any change in the market (Kudryavtsev & Cohen, 2010). Anchoring bias has been in the studies conducted by Shefrin (2002), Kudryavtsev and Cohen (2010), Bucchianeri and Minson (2013), and Leung and Tsang (2013).

2.1.4. Gambler’s fallacy

Gambler’s fallacy is heuristics behavioral bias where someone uses the frequency of past events to predict future outcomes. The Gambler’s fallacy stems from our tendency to assume that if a random event has occurred many times in the past that it will occur more or less often in the future (Boynton, 2003). The investors believe that market events that occurred often in the past will be rarer in the future (Matthews, 2010).

2.1.5. Availability Bias

Tversky and Kahneman (1974) reported that in availability heuristics, the probability of an event is based on cognitive decision-making abilities as well as knowledge of similar historical events.

2.2. Prospect variable

The significance of the prospect variable in making investment decision process was emphasized by two psychologists, Kahneman and Tversky, and published in the Econometrica in 1979. Prospect theory continually develops variably in diverse perspectives; one such evolution is the Prospect Theory and Expected Utility Theory (EUT). Prospect theory is an analysis of uncertain changes and risks that can be applied in many fields of economics such as finance, insurance, an industry organization, and more. Risks and changes are unique to each area (Frazzini, 2006). Prospect theory explains one of the major elements affecting individual decisions (Benartzi & Thaler, 2007).

2.2.1. Loss Aversion

Generally, loss aversion is a “build-in” to valuable function in prospect theory (Thaler, 1980). Elster (1992) reported that the feelings of people will change when they must make an important decision in their life. While making a significant decision, they usually experience the endowment effect, where they consider gaining something and losing the same thing in alternative choices.

2.2.2. Regret Aversion

The EUT literature stated that Regret Theory (RT) is also a basic behavioral decision theory. In 1982, findings by Loomes and Sugden (1982) confirmed regret theory as an essential part of Prospect Theory (Ben-elia et al., 2013).

Before making a decision, the investors must collect all sources of information and update their knowledge via a network (Cascetta & Cantarella, 1991) to avoid regretful, wrong decision. Many repeated experiments by Barron and Erev (2003) showed that the investors used feedbacks from other participants to avoid risk when facing loss and accepted more challenges when pursuing prospective gains.
2.2.3. Mental Accounting

Mental accounting is a psychology theory that explains financial reporting issues in evaluation reporting and disclosure investments (Thaler, 1980). Mental accounting converts financial activities such as gains and losses into various mental accounts. These mental accounting studies showed that where the money is made and the stakes for gambles are higher, mental accounting theory plays an essential role in evaluating financial reports to manage and develop the portfolio of these investors (Heath, 1995).

2.3. Herding variable

Banerjee (1992) states herding as “everybody doing what everyone else is doing even when their private information suggests doing something else”. Herding is likely to imitate past actions, rational or irrational (Devenow & Welch, 1996). Fernández et al. (2011) found evidence that investors tend to adopt the ideals and decisions of others when they rely on inaccurate information. Herding usually affects individual investors when collecting information and analyzing financial issues. They lack the ability to evaluate the market. Herding presumes that institutional financial specialists are individual speculators, who can incite the variance of grouping on the objective market (Ouarda et al., 2013).

2.4. Market variable

Hamilton and Lin (1996) demonstrated that economic recessions are key to stock market volatility. Besides, investor behavior is influenced by market variables such as the changes in price, news from politics, society, predictions for future trends, information from others, and the vital of stock (Waweru et al., 2008). Investors must pay close attention to stock information (Epstein, 1994). Krishnan and Brooker (2002) likewise advised that investors must consider market information to make rational decisions.

2.5. Investment Decisions and Stock Performance

Nodsinger (2014) stated that investors must gather and analyze a lot of information on various alternative stocks on the market. The accessible financial resources for investors are outdated. Their use is not recommended to analyze and evaluate information and behavioral finance (Shiller, 2006). According to Nodsinger (2014), all investors are affected by psychological biases. Ricciardi and Simon (2000) reported that speculators should claim the entire market instead of endeavoring to outflank the market. To be successful in owning the market, investors must face more difficulties and risks to make strong, rational decisions (Nguyen & Nguyen, 2020). They need special acknowledgment in the investment decision-making process (Nguyen, 2020; Pattiruhu & Paais, 2020; Nguyen et al., 2020; Tran & Nguyen, 2020).

They need to streamline assumptions and information, which decreases pragmatic complexities. The securities’ expected returns require them to accept risky challenges. This risk is influenced by the non-diversifiable future revenue stream unpredictability. Therefore, the modern finance theory states that behavioral finance (psychology biases and market variables) has two critical components for settling on venture choice (Andrikopoulos, 2007; Hirshleifer, 2001). As stated by Barber and Odean (1999), numerous financial specialists with predispositions for their organization’s stock, local stocks, and blue-chip stocks will harm their portfolio, exchanging consistently and acknowledging loss (misfortune aversion). The primary objective of the conduct fund was to acknowledge how speculation choices are made in a diversifiable market (DeBondt et al., 2010).

Regarding stock performance, Reinganum (1988) stated that value stocks perform better than growth stocks. The stock performance defined by Levine and Zervos (1998) is a complicated concept that encompasses the size, liquidity, degree of international assimilation, and volatility.

2.6. Research Model

Hypotheses for Research are as follows:

\[ H1: \text{Heuristic variable profoundly affects the investment decision making.} \]
\[ H2: \text{Prospect variable profoundly affects the investment decision making.} \]
\[ H3: \text{Market variable profoundly affects the investment decision making.} \]
\[ H4: \text{Herding variable profoundly affects the investment decision making.} \]
\[ H5: \text{Heuristics variable favorably affects investment performance.} \]
\[ H6: \text{Prospect variable favorably affects investment performance.} \]
\[ H7: \text{Market variable favorably affects investment performance.} \]
\[ H8: \text{Herding variable favorably affects investment performance.} \]

3. Research Methodology

This study analyzes data from Vietnamese investors who participate in the Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange (include HNX and Upcom). The sample size is 250 investors.
Questionnaires are sent to the respondents through social networks. The survey question examines the financial behavior of 250 investors that can be seen through 34 observed questions. The use of Heuristics which includes questions of representativeness, overconfidence, anchoring, gambler’s fallacy, and ability bias; the use of Prospect theory which covers loss aversion, regret aversion, mental accounting; the use of Market factors that cover change prices, market information, past trends of a stock, fundamentals of underlying stocks, customer preference, and reaction to price changes; the use of Herding theory includes only 1 factor which is following the others’ trading actions, use of investment decision-making cover Factor Investment Decision Making process and last factor - investment performance cover return rate and satisfaction of investment decisions.

The 5-point Likert is applied through 5 levels of scale: Totally disagree, Disagree, Neutral, Agree, totally agree. The survey questionnaire was finalized after consulting ten experts; five from academics, three from high-net-worth clients, and two from industry professionals.

SPSS and AMOS software packages were used in this study to process and analyze the collected data. The answers with incomplete information or partial opinions were removed before analysis. The following statistical tests were used: Descriptive Statistics, Cronbach’s Alpha test, Factor analysis, and Structural Equation Modeling (SEM).

### 4. Results and Discussion

The main data resources come from the measurement scales as shown in Table 1. Questionnaires are sent to the respondents through social networks. The survey question examines the financial behavior of 250 investors that can be seen through 34 observed questions.

#### Table 1: Questionnaire for the research

<table>
<thead>
<tr>
<th>HEURISTIC</th>
<th>PROSPECT</th>
<th>REGRET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Representative</strong></td>
<td><strong>Loss Aversion</strong></td>
<td><strong>Regret Aversion</strong></td>
</tr>
<tr>
<td>3 REP1 You buy ‘hot’ stocks and avoid stocks that have performed poorly in the recent past.</td>
<td>13 LO1 After a prior gain, you are more risk-seeking than usual.</td>
<td>15 REG1 You avoid selling shares that have decreased in value and readily sell shares that have increased in value.</td>
</tr>
<tr>
<td>4 REP2 You use trend analysis of some representative stocks to make investment decisions for all stocks that you invest in.</td>
<td>14 LO2 After a prior loss, you become more risk-averse.</td>
<td>16 REG2 You feel more sorrow about holding losing stocks too long than about selling winning stocks too soon.</td>
</tr>
<tr>
<td><strong>Overconfidence</strong></td>
<td><strong>Regret Aversion</strong></td>
<td><strong>Ability Bias</strong></td>
</tr>
<tr>
<td>5 OV1 You believe that your skills and knowledge of the stock market can help you to outperform the market.</td>
<td></td>
<td>11 AB1 You prefer to buy local stocks than international stocks because the information about local stocks is more available.</td>
</tr>
<tr>
<td>6 OV2 You are confident in your analytical abilities and market forecasting experience</td>
<td></td>
<td>12 AB2 You consider the information from your close friends and relatives as a reliable reference for your investment decisions.</td>
</tr>
<tr>
<td><strong>Anchoring</strong></td>
<td><strong>Prospect</strong></td>
<td><strong>Ability Bias</strong></td>
</tr>
<tr>
<td>7 AN1 You rely on your previous experiences in the market for your next investment.</td>
<td><strong>Loss Aversion</strong></td>
<td>11 AB1 You prefer to buy local stocks than international stocks because the information about local stocks is more available.</td>
</tr>
<tr>
<td>8 AN2 You forecast the changes in stock prices in the future based on the recent stock prices.</td>
<td></td>
<td>12 AB2 You consider the information from your close friends and relatives as a reliable reference for your investment decisions.</td>
</tr>
<tr>
<td><strong>Gambler’s Fallacy</strong></td>
<td><strong>Prospect</strong></td>
<td><strong>Ability Bias</strong></td>
</tr>
<tr>
<td>9 GA1 You are normally able to anticipate the end of good or poor market returns at the Ho Chi Minh Stock Exchange.</td>
<td></td>
<td>11 AB1 You prefer to buy local stocks than international stocks because the information about local stocks is more available.</td>
</tr>
<tr>
<td>10 GA2 Assuming a coin is tossed 10 times and results in a “backstroke”, you would expect the next roll to result in a “face”.</td>
<td></td>
<td>12 AB2 You consider the information from your close friends and relatives as a reliable reference for your investment decisions.</td>
</tr>
<tr>
<td><strong>Ability Bias</strong></td>
<td><strong>Prospect</strong></td>
<td><strong>Regret Aversion</strong></td>
</tr>
<tr>
<td>11 AB1 You prefer to buy local stocks than international stocks because the information about local stocks is more available.</td>
<td></td>
<td>15 REG1 You avoid selling shares that have decreased in value and readily sell shares that have increased in value.</td>
</tr>
<tr>
<td>12 AB2 You consider the information from your close friends and relatives as a reliable reference for your investment decisions.</td>
<td></td>
<td>16 REG2 You feel more sorrow about holding losing stocks too long than about selling winning stocks too soon.</td>
</tr>
</tbody>
</table>
4.1. Cronbach’s Alpha

From the data, this study found the Corrected item-total correlation and Cronbach’s Alpha. Most of the values are > 0.6, which means that the observed variables are linked together and measured for one factor (Heuristic). Only Cronbach’s Alpha of the OV variable (0.474) was < 0.6, which means OV is not suitable for evaluating the Heuristic factor. Cronbach’s Alpha for the remaining variables ranges from 0.686 to 0.892, indicating that these observational variables reflect the Heuristic properties. Corrected Item-Total Correlation is from 0.311 to 0.808, indicating that the observed variables contribute to the reliability of the scale. The MA has Cronbach’s Alpha > 0.6, but the item MA5 has a Corrected item-total Correlation < 0.3. Item MA5 contributes little to the scale.

4.2. Exploratory Factor Analysis

The EFA exploratory factor analysis was used to test the scale. Thirty-four observational variables were designed in the study. After reliability testing by the Cronbach Alpha coefficient, the OV factor and item MA5 were rejected.

The results show that KMO = 0.618 > 0.5; Barlett’s Sig value is 0.000 < 0.05 (5%). Observed variables are correlated in terms of the overall range, indicating that factor analysis is appropriate. The factor analysis showed that the Heuristic factor scale was at Eigenvalue = 1,030 with the Principle Axis Factoring extraction method and the non-perpendicular Promax rotation, which allowed four factors to be extracted from the eight variants. The total variance of the data was 73,087%.

Of the four factors extracted, we observed:

Group 1, Variables GA1 and GA2: The loading factor of each variable was larger than 0.5, so no item was rejected from the model. The two GA1 and GA2 observed variables were combined with relatively high loading factors (0.903 and 0.897). These observed variables correlate with the investors’ bets, their reflections, and their beliefs that they “have the ability to prediction the finale of good or poor market returns at the Vietnam Stock Exchange”.

Group 2, Variables AB1 and AB2: These variables have loading factors greater than 0.5 (0.923 and 0.838), so they were not rejected from the model. Observed variables AB1 and AB2 correlate to familiarity with information about the domestic and foreign stock as well as about trust in relatives, friends, and colleagues.

Group 3, Variables REP1, REP2: In this group of observed variables, the loading factors (0.889 and 0.748) are greater than 0.5 and were included in the research model. This group of variables correlates to investments in stocks that are “hot” in the market and investment decisions for all stocks based on trend analysis of some representative stocks.
Group 4, Variables AN1, AN2: Observed variables of this group had loading factors (0.848 and 0.756) greater than 0.5. This observation group correlates to the investors’ assessment of problems in the present based on similar problems in the past.

The KMO and Barlett’s test in the EFA factor analysis were 0.680 and 0.000, respectively, resulting in EFA 3 components at Eigenvalues = 1.009. The covariance value is 55.305%, which indicates that the three components are explained by a 55.305% variance of the data. From the above results, this study concludes that the scale is accepted and the observed variables in the three components are correlated in the sample. Based on the results of the EFA discovery factor analysis, this study concludes that the scale was acceptable.

Of the three factors extracted, we observed:

Factor 1, Variables LO1 and LO2: Their loading factors are 0.786 and 0.776, respectively, showing that these variables are statistically and significantly different from the Prospect. LO1 and LO2 represent fear of loss that outweighs incentives for profit.

Factor 2, Variables REG1 and REG2: These variables have loading factors 0.797 and 0.654, respectively, and were not removed from the model. REG1 and REG2 correlate to crowd psychology through aversion due to aversion to regret.

Factor 3, Variables ME1 and E2: With loading factors of 0.755 and 0.661, neither of these variables were eliminated from the model. This variable group is defined as a trend to divide money into different accounts according to their purpose, such as the source of money or usage for each type of account.

EFA conformity test: 0.5 ≤ KMO = 0.822 ≤ 1. Factor analysis was appropriate for actual data. Verification of the correlation between observed variables was as follows: Sig. = 0.000. The observed variables were correlated in each factor. Testing variance extract yielded Eigenvalues of 57.240%.

Market factors included MA1, MA2, MA3, MA4, and MA6. Herding elements included HE1, HE2, HE3, and HE4. The Investment Decision Making factor included IDM1, IDM2, and IDM3. Investment Performance factors included IP1, IP2, and IP3.

Market factor group: The factor loadings were 0.760, 0.758, 0.753, 0.689, 0.552. Since all values were larger than 0.5, all items had practical meaning for the Market factor and were kept in the model.

The herding factor group was measured by observed variables HE1, HE2, HE3, and HE4 and analyzed according to the Principal Axis Factoring method with Promax rotation. Observed variables with factor loading greater than 0.5 were rejected because they ensured sufficient convergence with the remaining variables in the scale.

IP factor group was measured by observed variables IP1, IP2, and IP3 and analyzed by the Principal Axis Factoring method with Promax rotation. The observed variables with loading factors were 0.820, 0.780, 0.639. They were not eliminated because they ensured sufficient convergence with the remaining variables in the scale.

IDM factor group was measured by observed variables IDM1, IDM2, and IDM3 and analyzed by Principal Axis Factoring method with Promx rotation. The observed variables with loading factors of 0.798, 0.777, and 0.634, all greater than 0.5, were not eliminated because they ensured sufficient convergence with the remaining variables in the scale.

4.3. Confirmatory Factor Analysis

As a result of the EFA, the study had six key concepts in the research model:

- Heuristic is measured by REP, AN, GA, AB
- Prospect is measured by the variables LO, REG, ME
- Market is measured by MA1, MA2, MA3, MA4, MA6
- Herding is measured by variables HE1, HE2, HE3, HE4
- Investment Decision Making is measured by the IDM1, IDM2, IDM3
- Investment Performance is measured by variables IP1, IP2, IP3

The results of the CFA analysis showed a CMIN value of 429.793 with 355 degrees of freedom and p = 0.000, indicating significance. Although the GFI (0.894) was lower than the recommended level (greater than 0.9), other values suggested that this model is appropriate for market data (CFI = 0.974; TLI = 0.970; CMIN / DF = 1.211 and RMSEA = 0.029). The CFA results for the measurement of factors affected the investment decision-making for the first CFA application, showing that the correlation between the GA and the Heuristic factor was low because the weight factor was less than the permissible standard of > 0.5. To measure the convergent validity, this variable was rejected and the second CFA was performed.

The results of the CFA showed that the observed variables are equal to the allowable standard (≥ 0.5) and statistically significant. The p-values were equal to 0.000 (the lowest was the MA3 rating of 0.569). It can be concluded that the observed variables used to measure the six elements of the scale attained convergent validity. The second model showed that the model had 303 degrees of freedom: Chi-square = 373.388 with p-value = 0.000 and fit coefficients chi-square / df = 1.232. The values of GFI = 0.903, TLI = 0.969, CFI = 0.973 were all greater than 0.9. RMSEA = 0.031 ≤0.05 met the requirement of Convergent validity.
In addition to the consideration of values in model fit, Discriminant validity and Convergent validity should be required in the CFA process. Since CR and AVE were greater than 0.5 (Heuristic and Prospect have AVEs that were close to but still less than 0.5; moreover, they are the second-order factor), they satisfied the convergent validity. All scales had aggregate reliability values within the range of very good, ranging from 0.707 to 0.870. Besides, most of the AVE values were greater than 0.5. This result shows that the scale used is highly reliable. Since the relative coefficients of the concepts (scales) were less than 1 (unit), they were distinguished by their value.

4.4. Structural Equation Modelling

The SEM results showed that the model has Chi-square = 374,737 (p = 0.000), CMIN/df = 1,233, TLI = 0.969, CFI = 0.973, RMSEA = 0; thus, the model is well-matched with market information (Nguyen Dinh Tho & Nguyen Thai Mai Trang, 2002).

The research was conducted to test established relationships. The estimated results of the main parameters in the study model show that all relationships were statistically significant (p < 0.05), meaning that the proposed correlation of H1, H2, H3, H4, H5, H6, H7, and H8 to concepts in the research model were accepted. H1, H2, H4, H5, H6, H7, and H8 to concepts had 5% significance level (p = 0.019 < 0.05). The unstandardized estimated results of the main parameters in the theoretic model showed whether the relationship between independent and dependent variables is statistically significant. The standardized coefficient showed the degree of impact between the independent and the dependent variables.

5. Conclusions

Research results show that:

**H1:** Heuristic variable profoundly affects investment decision-making. There is a positive relationship between the Heuristic factor and investment decision-making factor at the significance level p = 0.005 < 0.05 (r = 0.211). This relationship has a value of 0.211, showing that Heuristic has a positive impact on investment decision-making. More specifically, Heuristic is an important factor in creating investors’ decision-making investment.

**H2:** Prospect variable profoundly affects the investment decision-making at a significant level p = 0.004 < 0.05 (r = 0.313) and 95% confidence level. This relationship is valued at 0.313, which shows that prospect theory positively impacts investment decisions. Thus, Prospect theory is an important factor in making investment decision-making.

**H3:** (market variable profoundly affects the investment decision-making) is accepted at a significant level p = 0.019 < 0.05 (r = 0.169) and 95% confidence level. This relationship is valued at 0.169, which means that the Market factor is highly valued in making investment decisions and vice versa.

**H4:** Herding variable profoundly affects the investment decision making. There is a positive relationship between Herding factor and investment decision-making factor, which is accepted at the significance level p = 0.006 < 0.05 (r = 0.211). This relationship has a value of 0.154, showing that Herding has a positive impact on investment decision-making. More specifically, Herding is an important factor in creating investors’ decision-making investment.

**H5:** Heuristic variable favorably affects investment performance. There is a positive relationship between Heuristic factor and the factor of investment performance, which is accepted at a significant level p = 0.009 < 0.05 (r = 0.19). This relationship is valued at 0.19, showing that Heuristic has a positive impact on the investment performance of investors. More specifically, Heuristics is an important factor in investment performance.

**H6:** Prospect variable favorably affects the relative investment result. It is acceptable at the significance level p = 0.002 < 0.05 (r = 0.344) and 95% confidence level. This relationship, valued at 0.344, shows that prospect theory has a positive impact on investment performance and is an important factor in investment performance.

**H7:** Market variable favorably affects the relative consumption performance. It is accepted at the significance level p = 0.007 < 0.05 (r = 0.192). There is a positive relationship between the Heuristic factor and the dependency factor of investment performance. This relationship has a value of 0.192, indicating that the Market has a positive impact on investment performance. More specifically, the Market is an important factor that creates the investment performance of investors.

**H8:** Herding variable favorably affects the relative investment performance. It is acceptable at the significance level p = 0.001 (r = 0.178). There is a positive relationship between the Herding factor and the dependency factor of performance. This relationship has a value of 0.178, indicating that Herding has a positive impact on investment performance. More specifically, Herding is an important factor in creating investment performance.

Hypotheses H1, H2, H3, H4, H5, H6, H7, and H8 are accepted at 95% confidence level, indicating the important role of Heuristic, Prospect, Market, and Herding on Investment Decision-making and Investment Performance. Prospect had the strongest impact on Investment decision-
making ($\beta = 0.275$). Heuristic had the second strongest impact ($\beta = 0.257$), then Herding ($\beta = 0.202$), and finally Market ($\beta = 0.189$) had the weakest effect. Regarding Investment Performance, the Prospect factor has a higher degree of impact ($\beta = 0.298$) than Heuristic ($\beta = 0.228$), Herding ($\beta = 0.230$), and Market ($\beta = 0.212$). Pearson Sig of independent variables PA, CP, CR, EX, MU, ME, and dependent variable BP is below 0.05, thus, there is a linear relation among independent variables and BP. Specifically, two factors PA and EX have a strong correlation to BP, with a coefficient value of 0.599 and 0.530 respectively while EX and ME have the weakest correlation with r of 0.136. Simultaneously, four other factors, including Celebrity Credibility (CR), Match-up (MU), and Popularity (CP), Multiple Endorsements (ME) have a medium correlation to BP.

References


