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Research Paper

Is It Risky? The Impact of Personality Traits and Behavioural Biases on Investment Decisions

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Abstract

Investors' decisions are often influenced by behavioural biases like the availability bias and the disposition effect, which are shaped by personality traits such as openness, conscientiousness, extraversion, agreeableness, and neuroticism. This study investigates how these traits impact these biases, drawing from Bounded Rationality Theory and Dual Process Theory, which suggest that investment decisions blend rational (cognitive) and irrational (intuitive) elements. Using a quantitative approach with 716 participants, the data was analysed through the structural equation modelling (SEM) statistical technique using SmartPLS. Findings reveal that availability bias is positively influenced by openness and agreeableness. Conversely, the disposition effect is positively associated with openness, extraversion, and agreeableness. Investors who exhibit high levels of openness, extraversion, and agreeableness typically base their decisions on available information, often selling profitable stocks and holding onto declining ones, which can result in investment losses. Identifying these biases is crucial for investors, managers, and regulators as they navigate investment decisions effectively.

Keywords: Openness, Conscientiousness, Extraversion, Agreeableness, Consumer behaviour, Neuroticism.

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Introduction

A country's capital market plays a crucial role in supporting economic growth. The capital market in Indonesia is experiencing significant expansion, as evidenced by the growing number of publicly listed companies, the upward trajectory of the stock market index, rising investor participation, and increasing market capitalisation. The index's upward movement reflects a strong performance on the Indonesian stock exchange, suggesting a positive outlook for economic growth as most stock prices appreciate. The decision to invest in the capital market is influenced by various factors, including the investors' psychological mindset, country's macroeconomic conditions and companies' financial performance. A recent study in behavioural finance aimed to examine stock investment decisions, considering both financial and psychological aspects (Yusfiarto et al., 2022). It suggests that investment decisions are not solely driven by rationality but also by irrational factors.

In addition, personality traits are categorised into five traits (the Big Five Personalities) that significantly influence behavioural bias (Bashir et al., 2013). The five personality traits are openness, conscientiousness, extraversion, agreeableness, and neuroticism (OCEAN). According to Durand et al. (2013), there are two types of psychological biases are associated with personality traits. These include the availability bias and the disposition effect. According to Dan Egan, vice president of behavioural finance and investing at Betterment (an American financial advisory firm), two general personality traits—emotional intelligence and neuroticism—have been associated with investing behaviours. According to Egan's research, individuals who self-evaluate as having a higher level of neuroticism are more cautious with their portfolios and more responsive to market performance than those who self-evaluate as having a lower level of neuroticism. This indicates that they logged in more frequently overall, as well as more often in response to significant market fluctuations. Personality traits are essential for self-awareness regarding a person's behaviours to position an individual more favourably for investment performance (Gravier, 2022; Lim et al., 2022).

Furthermore, Redmond (2014) through his write-up in the Fund Insights of Morningstar, an American financial services firm, mentioned that there are several characteristics of personality traits regarding investment behaviour. Individuals who exhibit extraversion generally possess a greater capacity to tolerate risk, potentially resulting in increased returns. They may, however, incur excessive risk and a financial loss. Individuals with conscientiousness are long-term investors who are patient and avoid rash risk-taking. They are, however, excessively risk-averse. Furthermore, research suggests that people with neuroticism are drawn to risks due to their emotional appeal, and a higher risk tolerance may lead to higher rewards, similar to the extravert advantage. They are impulsive, and as a result, they are prone to making emotional financial decisions. Individuals with openness traits are imaginative, inquisitive, and receptive to novel concepts.

Therefore, the objective of this research is to determine which personalities will have an impact on the availability bias and disposition effect. When the influential personality traits can be identified, investors tend to be more cautious towards availability bias and the disposition effect, thus avoiding behavioural biases in making informed investment decisions that could yield optimal returns. Given the significance of personalities in shaping investors' investment behaviour, this study suggests the

following contributions:

- Investors can be cautious when making investment decisions so as not to rely solely on easily accessible information (availability bias) and have the tendency to hold onto losing stocks for too long (disposition effect). Both of these behaviours can lead to inaccurate investment decisions and hurt investors financially.
- Investors can make rational decisions to maximise their investment returns. Investors can seek out more relevant information to analyse the investment assets they choose. Investors can also enhance their financial literacy to enable rational thinking.
- Investment managers and broking firms can provide education to investors in the capital market on how to be cautious when making investment decisions.

The structure of this paper begins with the introduction, highlighting the research gap: not all investors behave rationally, and irrationality is caused by the presence of behavioural biases influenced by personality traits. The second section discusses previous research conducted in this field. The third section covers the methodology used in this study. Subsequent sections present the results and the discussions. The final section comprises the conclusion and implications of this research.

Literature Review

Underpinning Theories: Bounded Rationality Theory and Dual Process Theory

The theory of bounded rationality, introduced by Simon (1972), acknowledges that decisions and behaviour involve both rational and irrational elements. Rashid et al. (2022) highlighted in behavioural finance that human decisions are not always rational and are often influenced by irrational behaviour. People tend to opt for simpler information processing methods, leading to suboptimal decisions. This tendency, combined with factors such as limited information, time constraints, and cognitive limitations, contributes to irrational decision-making. Investors often rely on intuition and past experiences (Bihari et al., 2022), making them prone to systematic biases and errors due to their constrained abilities.

The Dual Process Theory is a widely accepted framework for understanding bounded rationality in decision-making. According to Wason (1974), it suggests that decisions can be influenced by both intuitive (System 1) and cognitive (System 2) processes. While variations exist, they agree on two main processing mechanisms: System 1, rapid and unconscious, and System 2, deliberate and conscious (Stanovich and West, 2008). Following the above, availability bias is a behaviour that heavily relies on available information when making decisions (Baker et al., 2022; Lee and Park, 2021). People tend to memorise relevant information and focus on things that can be seen or experienced, which can cause biases due to memory limitations and the strong influence of recent events (Chirovici, 2012). As for the disposition effect, it occurs when investors sell shares that have appreciated in value quickly while holding on to those that have declined for a long time (Prosad et al., 2015). This decision is often motivated by the fact that the pain of loss is felt more strongly than the pleasure of gain (Shefrin and

Statman, 1985).

Antecedents of Personality Traits on Behavioural Biases

Investor behaviour is related to the personality traits possessed by each investor. Each type of personality trait will determine the susceptibility of investors to behavioural biases, such as availability bias and disposition effect (Phung and Khuong, 2017). The determination of the most popular personality trait categories is based on The Big Five Personality Traits by Costa and McCrae (1992), which include five categories of personality traits: openness, conscientiousness, extraversion, agreeableness, and neuroticism (OCEAN).

Often, in investment decision-making, investors tend to rely on information that is easily accessible and memorable. Because decision-making is based solely on the ease with which one obtains information, it can lead to behavioural biases that ultimately make investment decisions suboptimal. Such behavioural biases are referred to as availability bias (Aljifri, 2023). The type of personality trait will affect how easily an investor is prone to behavioural biases.

In addition to the availability bias, investor behaviour is also susceptible to the disposition effect, which involves selling stocks that have gained value quickly because investors avoid losses and holding onto stocks that are still losing value for a long time because they have high self-esteem and do not want to be seen as having made a loss (Joshipura et al., 2023).

Individuals who exhibit a high degree of openness have a strong preference for acquiring and processing information, as well as the ability to gather innovative information from multiple sources (Palmer, 1991). Therefore, people with openness traits have analytical abilities to address fundamental questions but tend to be sceptical. They will not make their decision based only on readily available and accessible information (Heinström, 2003; Sadi et al., 2011). In contrast, people with openness traits tend to sell the winning stock early and hold the losing stock for a long period. This argument was supported by Bashir et al. (2013). Therefore, based on the aforementioned argument, the following hypotheses are proposed:

H1a Openness has a negative influence on the availability bias.

H1b Openness has a positive influence on the disposition effect.

It was evidenced from the literature that people with conscientious traits are determined, well-organised, persistent, punctual, credible, and perseverant (Gunkel et al., 2010). Individuals with high conscientiousness tend to solve problems actively and make decisions diligently. They execute trade transactions, aiming for optimal investment performance by relying on dependable information (Epstein and Schneider, 2008). Therefore, people with the conscientiousness trait are prone to availability bias. However, regarding the disposition effect, it has been reported that conscientiousness positively correlates with it, as conscientious investors are hesitant to realise their losses. Therefore, they tend to sell profitable stocks early and hold onto losing stocks for the long term (Jamshidinavid et al., 2012). Based on these arguments, the following hypotheses are put forth:

H2a Conscientiousness has a positive influence on the availability bias.

H2b Conscientiousness has a positive influence on the disposition effect.

Those who are extroverted are sociable, warm-hearted, and pleasant; these characteristics can also quantify their sociability (Sadi et al., 2011). They frequently involve family and friends in the decision-making process and are communicative (Heinström, 2003). Additionally, Kliger and Kudryavtsev (2010) argue that availability bias can be observed in how investors respond to changes in experts' recommendations and how they use daily market performance as a substitute for information on the availability of outcomes. People with extroverted personalities focus on external elements and do not consider their personal actions as the result of intellectual evaluation (Sadi et al., 2011). Bashir et al. (2013) found that extraversion has a reverse relationship with the disposition effect. The proposed hypotheses are as follows:

H3a Extraversion has a positive influence on the availability bias.

H3b Extraversion has a negative influence on the disposition effect.

Individuals who are agreeable possess qualities such as being forgiving, compassionate, virtuous, and well-liked by their peers (Martin et al., 2007). Agreeableness pertains to an individual's inclination to conform to others and their level of trust (Robbins et al., 2008). They tend to exhibit herd behaviour in their investment decisions, as they easily agree and accept available information. It has been argued that individuals with agreeable personality traits are most susceptible to psychological biases (Cham et al., 2023; Cham et al., 2024; Kubilay and Bayrakdaroglu, 2016; Eisen et al., 2002; Loh et al., 2023). However, agreeable people tend to agree to sell the gaining stock early and hold on to losing stock. This may be due to the fact that they just follow the suggestion from their peers. As mentioned by Bashir et al. (2013), there is a positive relationship between agreeableness and the disposition effect. Based on the evidence above, the proposed hypotheses are as follows:

H4a Agreeableness has a positive influence on the availability bias.

H4b Agreeableness has a positive influence on the disposition effect.

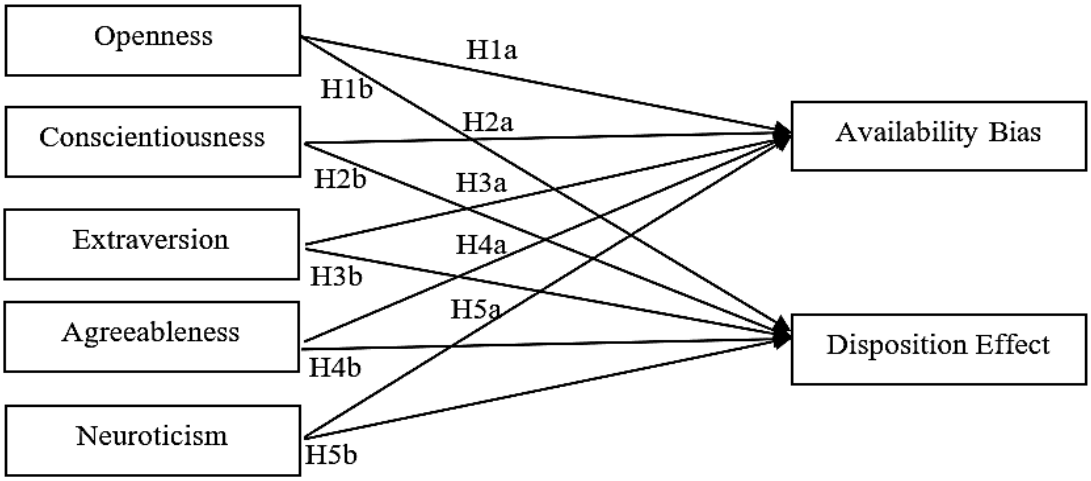
Neuroticism is related to emotional instability, which is connected to stress, insecurity, high anxiety, moodiness, fear, depression, and impulsiveness (Migliore, 2011). People with neuroticism are not easily influenced by others and tend to be resistant (Costa and McCrae, 1992). Investors with high neuroticism tend to gather as much information as possible to alleviate anxiety (Krohne et al., 2000). They tend to rely on the available information that easily accessible to them. Therefore, it can be concluded that there is a positive relationship between neuroticism and availability bias (Durand, 2013). Due to increased anxiety, neurotic individuals are more likely to profit from selling their stock and holdings for a long-term loss (Lin, 2011). Therefore, there is a positive relationship between neuroticism and the disposition effect. Thus, the following hypotheses are postulated:

H5a Neuroticism has a positive influence on the availability bias.

H5b Neuroticism has a negative influence on the disposition effect.

Based on the discussion above, the conceptual framework that explains the relationship between openness, conscientiousness, extraversion, agreeableness, and neuroticism with availability bias and the disposition effect is reflected in Figure 1 below:

Figure 1: Conceptual Research Framework



Methodology

Data Collection and Sampling Method

This study utilised a self-administered questionnaire conducted with investors on the Indonesia Stock Exchange. The questionnaire was in digital form and sent to respondents through a link. Respondents were asked to indicate their level of agreement with each statement by selecting their choices in the questionnaire. After a one-month period, data was collected from 1,017 investors. Of these, 243 samples were rejected due to several factors, resulting in a total of 774 responses. Sample removal was caused by various reasons, including a lack of a customer fund account or Rekening Dana Nasabah (RDN) for 15 samples, high school education for 213 samples, double entry for 8 samples, and incorrect filling out of a securities company for 7 samples. Outliers were discarded based on Mahalanobis distance, resulting in 58 samples being removed. This resulted in a final sample size of 716 for further analysis using SEM. It has exceeded the minimum sample requirements based on the inverse square root method with a path coefficient range of 0.05–0.1 at the 95 percent level of significance, which is 619.

Measurement Instrument

Drawing from the conceptual model outlined, the instruments used in this study were modified from established literature, with slight adjustments to better fit the specific context being investigated. The study used a seven-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). In terms of personality traits, a five-item openness measurement scale was adapted from the research by Tauni (2017) in

measuring openness traits of an investor's personality, operationalised upon the interest to try new things, curiosity, experimentation, contemporary, modern, and the willingness to take greater chances. Meanwhile, in gauging the conscientiousness traits, this research was also adapted to the five measurement scales by Tauni (2017), which covered characteristics such as being resolute, well-organised, persistent, punctual, and having a goal-orientated mindset. As for extraversion traits, it was measured based on five measurement scales by Tauni (2017), operationalised upon high excitement, optimism, ambition, assertiveness, and outgoingness. Following this, agreeableness traits were measured based on four measurement items by Tauni (2017), describing the characteristics pleasant, tend to obey social norms, courteous, and avoid confrontation to maintain harmony. The last category of personality traits is neuroticism, measured by five items of questions from Tauni (2017) describing the characteristics linked to emotional instability, including stress, insecurity, high anxiety, high temperament, and depression. Furthermore, to measure the availability bias that occurs in investors' behaviours, this research adapted the measurement items from Baker et al. (2018), which consist of five indicators covering the behaviour of focusing on relevant information that is easy to retrieve or available from financial advisors, friends, and advertising. Meanwhile, there are also five indicators to measure disposition effect that were adopted from Baker et al. (2018), operationalised upon the behaviour of holding losing stocks for long periods because of avoiding realising losses and selling winning stocks too early because of maintaining self-esteem. All the measurement items used in this study are provided in the *Appendix*.

Results

Profile of Respondents

The demographic profile of the respondents presented in Table 1 consists of 52.7% males and 47.3% females. 48.9% of total respondents are between 26 and 35 years old, while only 3% of the total population are 55 years and older. Regarding the education profile, 80.7% of the total respondents have an undergraduate educational background. The second-largest percentage are graduates. It means that most of the respondents have a high level of education. 64% of the total respondents are married. It also found that 50.3% of respondents are professionals. The majority of respondents (60.9%) have less than one year of investing experience. Only 4.1% of respondents have five years or more of investing experience. It implies that they are relatively new investors with little experience.

Table 1: Demographic profile of the respondents

Demographic Factors	Category	Percentage
Gender	Male	52.7%
	Female	47.3%
Age	17-25	42.7%
	26-35	48.9%
	36-45	6.0%
	46-55	2.0%
	>55	0.4%
Education	Diploma	8.7%
	Undergraduate	80.7%

	Graduate	10.1%
	Doctorate	0.6%
Marital Status	Not married yet	35.1%
	Married	64,0%
	Widow/widower	1.0%
Occupation	Academician	30.4%
	Entrepreneur	19.3%
	Professional	50.3%
Investing Period	<1 year	60.9%
	1-3 years	30.0%
	>3-5 years	5.0%
	>5 years	4.1%

Measurement Model Evaluation

Since the data for exogenous and endogenous variables were gathered using a single instrument, the issue of common method bias (CMB) may arise. In this study, Harman's single-factor analysis was adopted to test for CMB (Podsakoff et al., 2003), and the result showed that the sole factor explains only 18.88% of the total variance explained. Since it is below 50%, CMB has not been an issue in this research.

To evaluate the measurement model, which involves assessing the relationships between the latent variables and their respective indicators, it is necessary to conduct tests for composite reliability, convergent validity, and discriminant validity. Hair et al. (2017) define convergent validity as the degree of correlation between assessment measures and other associated measures. A factor loading study was conducted to evaluate the convergent validity of each indicator in relation to its associated construct. This analysis required that the loading of each item be higher than 0.50, as suggested by Fornell and Larcker (1981).

As shown in Table 2, since the value of all indicators in each construct exceeds 0.50, convergent validity was confirmed. Simultaneously, as established by Kline (2018), convergent validity can be evaluated using the average variance extracted (AVE) method, where the AVE values should exceed 0.50. Based on these results, it is confirmed that convergent validity was achieved. To ensure that the indicators can be significantly differentiated from the items of other constructs in a meaningful way or that various measurements of distinct entities are unrelated, discriminant validity was employed. Referring to Gefen et al. (2011), it is necessary to conduct a composite reliability analysis on each individual construct, with the result exceeding the minimum recommended value of 0.70. The other two indicators are Cronbach's alpha, which has a threshold of 0.70, and RhoA, which has a threshold value of 0.7 (Dijkstra and Henseler, 2015). This reveals that all of the reliability tests were satisfied, indicating that the measurement model was reliable. The number of final indicators differs from the original indicators because indicators that do not meet reliability and validity thresholds are eliminated.

In addition to the above, discriminant validity is achieved when the HTMT ratio value is less than 0.85 (Ting et al., 2017). The results in Table 3 (the bold numbers) indicate that discriminant validity is not an issue in this research, as all the HTMT ratios are less than 0.85.

Table 2: Convergent validity and construct reliability

Construct	Items	Loadings	Cronbach's Alpha	Composite Reliability	rhoA	AVE
Agreeableness	A1	0.742	0.752	0.842	0.753	0.572
	A2	0.768				
	A3	0.775				
	A4	0.740				
Availability Bias	AB1	0.829	0.738	0.851	0.753	0.657
	AB2	0.854				
	AB3	0.744				
Conscientiousness	C1	0.794	0.819	0.880	0.825	0.649
	C2	0.844				
	C3	0.736				
	C5	0.842				
Disposition Effect	DE2	0.849	0.782	0.872	0.801	0.694
	DE3	0.857				
	DE4	0.791				
Extraversion	E1	0.819	0.905	0.930	0.907	0.726
	E2	0.887				
	E3	0.855				
	E4	0.874				
Neuroticism	N2	0.772	0.738	0.837	0.894	0.633
	N4	0.895				
	N5	0.710				
Openness	O1	0.708	0.788	0.863	0.797	0.613
	O2	0.851				
	O3	0.809				
	O5	0.755				

Table 3: Discriminant validity - Hetero-Trait-Mono-Trait (HTMT)

	A	AB	C	DE	E	N	O
A							
AB	**0.323**						
C	0.467	**0.242**					
DE	0.226	0.558	**0.074**				
E	0.516	0.272	0.519	**0.181**			
N	0.040	0.050	0.098	0.034	**0.082**		
O	0.267	0.373	0.447	0.161	0.413	**0.093**	

Note: AB=Availability Bias; DE=Disposition Effect; A=Agreeableness; C=Conscientiousness; E=Extraversion; N=Neuroticism; O=Openness

Structural Model Evaluation

The results presented in Table 4 demonstrate that 12.6% of the variability in availability bias can be accounted for by the factors of openness, conscientiousness, extraversion, agreeableness, and neuroticism. Furthermore, the PLS-SEM analysis results demonstrated that availability bias was significantly influenced by openness ($\beta = 0.223$, $p < 0.001$) and agreeableness ($\beta = 0.156$, $p < 0.001$). In addition, 14.9% of the variance in the disposition effect can be explained by the OCEAN personality traits, as shown in Table 5. The findings from the PLS-SEM analysis revealed that openness ($\beta = 0.084$, $p < 0.05$), extraversion ($\beta = 0.100$, $p < 0.05$), and agreeableness ($\beta = 0.140$, $p < 0.001$).

Table 4: Path analysis of structural model

Path	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	Decision
O -> AB	0.223	5.301	0.000**	H1a supported
O-> DE	0.084	1.776	0.038*	H1b supported
C -> AB	0.032	0.744	0.229	H2a not supported
C -> DE	-0.06	1.285	0.099	H2b not supported
E -> AB	0.068	1.596	0.055	H3a not supported
E -> DE	0.100	2.055	0.020*	H3b supported
A -> AB	0.156	3.842	0.000**	H4a supported
A -> DE	0.140	3.062	0.001**	H4b supported
N -> AB	-0.057	1.284	0.100	H5a not supported
N-> DE	-0.037	0.762	0.223	H5b not supported

Note: **p-value < 0.001, *p-value < 0.05, AB=Availability Bias, DE=Disposition Effect, O=Openness, C=Conscientiousness, E=Extraversion, C=Conscientiousness, E=Extraversion, A=Agreeableness, N=Neuroticism, R^2 (AB) =0.126, R^2 (DE) =0.149

Discussion

This study found that openness positively influences availability bias, in contrast to previous research by Sadi et al. (2011). The discrepancy may be attributed to varying levels of financial literacy among individuals. High openness, coupled with high financial literacy, enables individuals to recognise and mitigate availability bias by exploring diverse viewpoints. Openness traits also have a positive influence on the disposition effect. It is in accordance with the research conducted by Ahmad (2020). Individuals with high receptivity may pursue new experiences and take risks, potentially leading to prolonged retention of unprofitable investments or tolerance of volatility. While openness encourages exploring investment options, it may also create emotional attachments that hinder divestment, even when financially wise. Openness, despite fostering innovation, can increase emotional sensitivity to losses, strengthening the disposition effect.

Extraversion traits have a positive and significant influence on the disposition effect. It is supported by research conducted by Van de Venter and Michayluk (2008). Durand et al. (2013) also mentioned that extraverted individuals are often influenced by others' opinions, leading them to hold onto investments longer than necessary due to social pressures (Lim et al., 2022; Moedeen et al., 2024). Their positive outlook and higher risk tolerance may lead extraverts to hold onto losing investments in hopes of a turnaround.

In addition, agreeableness traits have a positive influence on availability bias. This outcome indicated that agreeable individuals may rely on information that aligns with their beliefs, ignoring dissenting viewpoints. They are prone to accepting information without critical evaluation and trusting others' opinions without verifying facts. Agreeable individuals may follow prevailing opinions, leading to reliance on easily available information and reinforcing availability bias. It is also supported by Eisen et al. (2002), who mentioned that agreeable investors tend to accept information without much evaluation. Furthermore, agreeableness traits have a positive influence on the disposition effect. To avoid conflict, agreeable individuals may hesitate to sell losing investments; as a result, they are reluctant to sell the losing stock. They prioritise

maintaining relationships, leading to a reluctance to sell, even if it's financially wise. Agreeable individuals seek a positive reputation in their investment approach, driving them to sell winning stocks early and succumb to the disposition effect (Durand et al., 2013).

This study emphasises the significance of understanding specific personality traits to mitigate behavioural biases. The failure to identify personality traits can lead to a non-optimal investment decision. Knowing the types of personality traits they possess and the potential biases they may experience, investors can become more cautious and act rationally. From a managerial perspective, this research offers practical implications for investors, investment managers, stock brokerages, and stock exchange authorities. Understanding personality traits enables broking firms and fund managers to exercise greater caution and vigilance concerning investors' potential exposure to disposition effects and availability bias, both of which can adversely affect stock investment decisions. These findings suggest that fund advisors and brokerages should enquire about their clients' characteristics or conduct personality assessments before offering investment advice. For the stock exchange authorities, knowing the personality traits of the investors enables them to educate the investors about the stock market movement and appropriate investment activities that lead to optimal investment decisions.

This research also has implications that individuals with personality traits of openness, extraversion, and agreeableness should be cautious of the potential for dispositional effects. Meanwhile, the individuals with openness and agreeableness traits tend to suffer from availability bias. This is because these three personality traits share a common characteristic: a tendency to accept available information without analysing it first. If investors are aware of their own personality traits, they can anticipate potential behavioural biases that may affect their investment decisions, ultimately leading to optimal returns.

Practical Implications for Asian Business

Knowledge of the relationship between personality traits and behavioural biases in stock investing is highly valuable in Asian businesses. In Asia, people are still heavily influenced by traditions and cultures that vary across each country. Asians often adhere to hierarchical and collective decision-making, including investment decisions, which can lead to susceptibility to availability bias. Understanding the types of personality traits they possess can lead individuals to be more cautious and not readily accept available information, including that from influential figures or higher hierarchies.

Asian business offers rapid growth opportunities, market expansion, and technological advancements that have a significant impact on Asian countries' capital markets (Cham et al., 2022; Lacap et al., 2022; Tan et al., 2019). Fluctuations in stock prices due to foreign investors' entry are often felt by local investors. The ups and downs of stock prices must be readily faced by local investors. The disposition effect, commonly experienced by investors in Asian stock exchanges, frequently arises and needs to be anticipated. By understanding personality traits, investors can avoid the disposition effect and navigate stock price fluctuations to achieve optimal returns.

However, most capital markets in several Asian countries are still developing. This

developmental phase is marked by low financial literacy and financial inclusion in stock investments. Lack of knowledge and information about stock investments makes investors vulnerable to behavioural biases that lead to irrational investment decisions. Due to limited knowledge, investors often make decisions based on readily available information without conducting fundamental analysis first. Additionally, irrational behaviour also occurs when investors try to hold onto losing stocks for a long time while selling profitable stocks as quickly as possible. Such behaviour should not occur in Asian countries with more advanced capital markets. According to Rahma and Ernawati (2020), capital markets in Asia are influenced by external factors, including the US federal funds rate. This factor affects the capital markets in several Asian countries, including Indonesia, Singapore, Thailand, and the Philippines. Any issues related to changes in the US federal funds rate are likely to become crucial information, which usually spreads quickly and becomes available in the capital markets, serving as a basis for investment decision-making by investors.

Countries such as Sri Lanka, which is also a middle-income emerging market in Asia, have capital markets that are still developing, similar to Indonesia. The status improvement is expected to further open up the country's international capital markets and attract investors targeting emerging markets with strong projected growth (Kengatharan and Kengatharan, 2014). Research findings indicate that behavioural biases influence investor behaviour at the Colombian Stock Exchange. Additionally, the same phenomenon occurs at the Islamabad Stock Exchange in Pakistan. According to Khan (2020), it was found that the disposition effect has a positive impact on the investment decision-making process. This means that there is behavioural bias among investors in Pakistan, which is supported by their lack of financial literacy.

According to Prosad et al. (2015), behavioural biases among investors in New Delhi, India, are influenced by demographic factors and trading frequency. The dispositional effect is not influenced by gender. However, investors aged 31–40 years with less than one year of experience are more likely to experience the disposition effect. Higher trading frequencies also tend to be associated with behavioural biases. These findings can serve as a reference for investors in Indonesia. This means that with the dominant age group of investors in Indonesia being 26-35 years old, investors need to be cautious about behavioural biases. Similarly, because many new investors in the Indonesia Stock Exchange have less than one year of experience, they should be more vigilant about psychological factors affecting investment decision-making.

Other Asian countries, such as the Philippines, which share similarities with Indonesia in capital market development, exhibit characteristics almost identical to Indonesia, such as a strong investor relationship (Pamplona, 2023). However, research has proven that close relationships among investors do not lead to behavioural bias, as they still tend to behave rationally by continually seeking financial knowledge to analyse investments before making decisions. Investor behaviour in the Philippines can serve as a reference, suggesting that the more financial knowledge an investor possesses, the less likely they are to experience behavioural biases. To anticipate and prevent behavioural biases in Indonesia, investors should also enhance their financial knowledge.

The study conducted by Ngoc (2014) on the Ho Chi Minh Stock Exchange, Vietnam, also found similar results, indicating that the investment decision-making process is

influenced by behavioural biases, including overconfidence, anchoring, herding, loss aversion, and regret. Market factors, however, continue to dominate the basis for investment decisions. This means that when investing, investors continue to consider market conditions and do not rely solely on psychological factors, which could lead to decision-making errors. Investor behaviour in Indonesia, which shares similarities with Vietnam, also consistently observes market movements or trends. Although not entirely rational, investors remain relatively less focused on psychological factors.

Another study on the Malaysia Stock Exchange conducted by Bakar and Yi (2016) found that availability bias has the strongest influence compared to other behavioural biases, such as overconfidence and conservatism. This finding reinforces the conclusion that, even in nearly all Asian countries, including Malaysia's relatively advanced capital market, behavioural biases caused by psychological factors still occur. This means that in investment decision-making, investors do not always act rationally.

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Appendix

Variables	No	Item
Openness	1.	I often try new things.
	2.	I often enjoy playing with theories or abstract ideas.
	3.	I am interested in speculating about the nature of the universe or the human condition.
	4.	I have a lot of intellectual curiosity.
	5.	I am intrigued by the patterns I find in art and nature.
Conscientiousness	1.	I am pretty good about pacing myself to get things done on time.
	2.	I am dependable as I should be.
	3.	I keep my belongings neat and clean.

	4.	I waste a lot of time before settling down to work.
	5.	I can get organized.
Extraversion	1.	I really enjoy talking to people.
	2.	I am a very active person.
	3.	I often feel as if I am bursting with energy.
	4.	I consider myself as a cheerful and high-spirited person.
	5.	I make friends easily.
Agreeableness	1.	I generally try to be thoughtful and considerate.
	2.	I never get into arguments with my family and co-workers. Most people think that I am not selfish and egotistic.
	3.	Most people think that I am not cold and calculating.
	4.	Most people think that I am not cold and calculating.
Neuroticism	1.	When I am under a great deal of stress, sometimes I feel like I am going to pieces.
	2.	Sometimes I completely feel worthless.
	3.	Too often, when things go wrong, I get discouraged and feel like giving up.
	4.	I often feel tense and anxious.
	5.	I often feel inferior to others.
Availability Bias	1.	I prefer to invest in stocks which have been evaluated by a well-known expert
	2.	My investment decision depends on positive new information released regarding the stock.
	3.	If someone had told me that a financial crisis is about to happen in a year's time. I would be convinced.
	4.	I prefer to buy stocks on the days when the value of the index increases.
	5.	I prefer to sell stocks on the days when the value of the stock market index decreases.
Disposition Effect	1.	I will keep holding stocks when the price is lower and will not sell them until rebound.
	2.	There is profit from several share transactions for me at times, which could not compensate for one loss.
	3.	If the stock market index has been surging for a while, I will continue holding unprofitable stocks and will not sell them immediately or buy other stocks.
	4.	After selling profitable stocks, I will be upset with those losing ones that have not been sold yet.
	5.	I sell profitable stocks because I am afraid that the stock price would fall again.

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