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The Impact of Personality Traits on Financial Decisions through Financial Knowledge and Investment Risk

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Abstract

The personality of the investor has a significant role in determining investment decisions. Investors' personality traits and financial literacy determine their ability to understand investment risks. This capability enables investors to make appropriate investment decisions and enhances the competitiveness of the investors and the organization for which they work. This study examines the impact of personality traits on financial decisions mediated by financial literacy and investment risk. Data was collected from stock investors (individuals or organizations) in Indonesia, with as many as 455 respondents. The proposed hypotheses were tested and verified using the partial least squares approach using SmartPLS software version 4.0. The results indicated that personality traits composed of openness, conscientiousness, extraversion, agreeableness, and neuroticism affect financial literacy, investment risk, and financial decisions. Financial literacy positively and significantly impacts investment risk and financial decisions. The ability of investors to pay attention to risks in investing can provide many alternatives to increase the influence on financial decisions. This research makes a theoretical contribution to enriching the theory of finance behavior in making investments that provide profits. The practical implication is to provide insights for financial consultants to improve competitiveness through financial understanding, especially adjusting to personality in determining appropriate investment decisions.

Keywords: *personality traits, financial literacy, investment risk, financial decision*

JEL Classification: G15, G20, G32, L25

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1 INTRODUCTION:

The financial decision is one of the most essential decisions for an individual and organization's short- and long-term sustainability. It relates to selecting any funds available to make investments by choosing one or more alternative purchases that incur the least cost. Hence, an organization and individual must be able to make a proper financial decision when investing. This capability is essential in sustaining and enhancing the competitiveness of investors individually or as a financial consultancy. Consequently, financial decisions require human resources with excellent competency to analyze and select the best investment choices. Human resource development is the focus of every organization in maintaining competitiveness in the current era. Human resources also determine the company's direction in development (Marchalina et al., 2021). In essence, human resources are employed in an organization as mobilizers, thinkers, and planners to achieve the goals of that organization. The organization provides income to each workforce following the capabilities and regulations applicable to a region. Workers with adequate income can have financial planning that follows their needs, while workers below the standard of requirements cannot carry out proper financial planning.

Considering individual personality and competency as the primary contributors to making a financial decision, this study explores the components of personality that could affect financial decisions. Employees have different personalities in terms of using the income they have every month according to their needs in life. Personality is also determined by each individual from various areas of life, including understanding motivation, goals, and social well-being in Taiwanese students (Yang & Koo, 2022). Lifestyle is a personality factor that determines the control of income utilization. The way of life or the overall style of behavior of each individual, shown in the form of attitudes, dispositions, belief values, motives, and so on, constitutes a person's personality—the differences in the way each individual makes decisions ultimately determine success in financial management in the future. Financial management carried out by each institutional investor is a strategy for enhancing family financial goals or institutional competitiveness in outperforming the competitor in the short, medium, and long term. In financial planning set by individuals or institutions of investment, the ability to manage investments is determined by their traits (Akhtar & Das, 2020). This investment is an action where someone uses their money in the hope of a profitable return in the future (Dinu & Bunea, 2022). The investment can be decided individually or through an investment manager who works for institutional investment. The capability of individual investors or financial consultants to decide on investments will improve competitiveness.

Individuals make investments with the expectation of benefiting from the capital that has been invested. Similarly, institutional investors make the customer investment result in benefits as expected. Investment is an activity or action in which a person or institution contributes his money or property within a certain period to get a profitable return in a future period and can be utilized according to their needs. When an institutional investor can benefit its customers based on the capital invested, it will attract other customers to invest through the institution. The ability to understand the expected investment will benefit their own needs in the future. Each individual or institution has the knowledge and emotions to make investment choices. Determination of a person’s behavior can determine preferences in determining stock investments (Tauni et al., 2017a, 2017b). A person’s information and knowledge largely determine the decision to invest. Personality traits are closely related to the regulation of a person’s emotions. A person’s personality refers to how the individual can interact and behave with others in setting a defined investment (Pak & Mahmood, 2015).

During and after the COVID-19 pandemic, many investors experienced a high level of vigilance when the economy experienced a drastic decline (Dinu & Bunea, 2022). Individual personality traits can determine attitudes and personalities toward commitments set in organizational determination (Marchalina et al., 2021). For this reason, the emotional stability problem in investing in stock selection is diverse - personality traits such as moderation and financial literacy determine mortgage delinquency (Chhatwani, 2022). A person’s personality determines the investment chosen and managed to produce investment performance (Akhtar & Das, 2020). A person’s personality traits in managing investments and encouraging working capital management can influence economic development (Zheng et al., 2022). A good understanding of each individual in derivatives market products can assist an investor in deciding to invest (Hsiao & Tsai, 2018).

Moreover, financial literacy is essential to understanding financial resources to support investment decisions, manage adequate financial management, and improve financial health (Lontchi et al., 2022). On the other hand, personality traits influenced the financial literacy and investment intention of 327 investors in India to help make decisions (Jain et al., 2022). The actual increase in financial literacy impacts individuals who understand some financial behaviors (Chen et al., 2023; Shkvarchuk & Slav'yuk, 2019). For institutional investment, the financial literacy of the manager or decision-maker needs to be improved to take advantage of opportunities related to financial assets (Schuhen et al., 2022). A person’s financial literacy can help them make choices about financial products so that individuals who understand finances well can use relevant information and take advantage of it (Fanta & Mutsonziwa, 2021). Basic knowledge of controlling financial resources is essential in managing them, including investing (Pandey et al., 2022). Financial literacy can help individuals generate, manage finances, store, invest, and use finances efficiently. People who have adequate financial literacy can optimize their opportunities and reduce obstacles that might occur. The knowledge and skills possessed by the individual can reduce and even eliminate the risks faced when making investments. Financial literacy has been incorporated into the school curriculum to improve students' money management skills (Ho & Lee, 2020).

Financial literacy is a person's ability to plan, make investment determinations, and respond to financial events (Philippas & Avdoulas, 2020). If a person who works for an institutional investor has adequate financial literacy skills, they can plan an investment well and make decisions about investing. Overconfidence that a decision-maker has is negatively related to investment decisions (Ahmad & Shah, 2022). The ability of individuals or institutional investors to understand financial concepts helps them make investment choices safely and can give them a competitive advantage over other institutional investments (Corsini & Giannelli, 2021). The choices made also have specific considerations, including individual needs, expectations, and minor risks. An increasing understanding of financial literacy and primary economic education needs to be improved so that investors can manage financial assets and make financial investment decisions (Schuhen et al., 2022). Financial literacy is a human asset that empowers individuals to manage their finances and solve problems in making good decisions (Gedvilaite et al., 2022). Investors' financial literacy is determined by comparing the level of risk obtained with the rate of return. The financial literacy of each individual can maintain risk tolerance in determining financial decisions related to the amount of return obtained (Hermansson & Jonsson, 2021). Financial literacy and risk perception influence the determination of investment decisions (Ahmad & Shah, 2022). Increasing financial literacy helps investors invest with a level of comfort they have between the comparison of the level of risk and the rate of return (Mushafiq et al., 2021).

In addition, financial knowledge is also an influencing component that can facilitate effective decision-making and serve as a guideline for financial decisions (Sing & Lee, 2020). The expected value determines an investment made by an individual, with the value received as a consequence of risk (Jagun, 2020). Another factor that could affect a financial decision is the investment risk that could emerge from investing. Economic growth can determine investors' ability to determine investments with high risk, so economic conditions can influence investors in deciding the chosen strategy for investing. Research indicates that risk can affect financial decisions. The relationship between risk and return in financial investment decisions is negatively related, where a high level of risk will occur when investors expect significant returns (Van Dinh, 2021). Decision determination in investing in crowdfunding is determined by perceived risk for investors and is influenced by investment risk and legal risk (Wasiuzzaman et al., 2022). A person's investment decision is determined by their value and ideology and the perceived behavioral risk that has been determined (Shahid et al., 2023).

The above description has elaborated upon several studies conducted in different countries concerning the relationship between financial decisions, personality traits, financial knowledge, and investment risk. However, those studies are concerned only with separate and partial relationships between two constructs. This study fills the gap and investigates the relationship of four constructs simultaneously, making it novel. This is essential, as investment risk, financial knowledge, and personality traits could simultaneously affect financial decisions. Moreover, to the authors' best knowledge, no such study has explored the simultaneous relationship of those constructs. In addition, it is reasonable that personality traits, financial knowledge, and investment risk could be affected by the country's culture and level of education obtained, such as in Indonesia, where this survey was conducted. Therefore, this study will examine the influence of personal traits on financial decisions through the mediating role of financial knowledge and investment risk. To do so, this study examines six factors: 1) the impact of personality traits on financial literacy, 2) the influence of personal traits on investment risk, 3) the impact of personality traits on financial decisions, 4) the effect of financial literacy investment risk, 5) the influence of financial literacy on financial decisions, and lastly, 6) the effect of investment risk on financial decisions

The rest of the paper is structured as follows. The second section outlines the theoretical background and develops the hypothesis to answer the research question. The third section deals with research objective, methodology, and data. The fourth section presents the result and discussion. The last section draws the conclusion and provides further research suggestions.

2 THEORETICAL BACKGROUND

2.1. Personality traits

As elaborated upon in the introduction, this study investigates the role of personality traits in financial decisions. Several previous theories define this concept, which could support this study.

Choosing an investment depends on the person's personality traits and whether it matches their interests. The established personality can determine organizational changes and decision-making commitment (Marchalina et al., 2021). In addition, the suitability of one's personality to the chosen investment impacts one's happiness. Personality is an individual's demonstrated way of making investments that match their expectations. A person's characteristics are thoughts, feelings, and behaviors that consistently determine investment management over time (Akhtar & Das, 2020). One person's personality can be similar, but it has a tendency to stand out from one person to another. Personality can help better understand investment behavior based on phenomena taken from some ideas and practices already carried out (Shkvarchuk & Slav'yuk, 2019). A person's behavior in the decision-making process makes it easier when they have information that follows their investment goals. The effects of heuristics as a form of quick decision-making, sometimes not equipped with sufficient information, often make market participants suffer losses. Tauni et al. (2018) state that investment decisions depend on openness, conscientiousness, and an agreeableness personality. Jagongo and Mutswenje (2014) state that a person's personality in paying attention to investment decisions consists of accounting information, self-image, advocate recommendations, personal finance needs, and neutral information. A person's character depends on the interpersonal attributes of having the ability to communicate and the behavior of individuals with their internal characteristics in determining investments (Akhtar & Das, 2020). A person's personality is used to communicate, interact and behave with others in an investment decision (Pak & Mahmood, 2015).

Personality traits require an always consistent approach to assessing a person's personality. Many scholars have identified the five prominent personalities: openness, conscientiousness, extraversion, agreeableness, and neuroticism (Tauni et al., 2017a, 2018; Akhtar et al., 2018; Zheng et al., 2022). The so-called big five personality traits do not merely mean that human personality consists of only five types. Still, most human personalities are depicted with these five types (Yang & Koo, 2022). Personality traits can help one understand financial behavior based on economic phenomena from one's psychology. Personality traits can also be said to be a pattern of habit that a person has in determining influences or behaviors to determine a decision (Chhatwani, 2022). Based on such studies, this paper adopts the five significant personality trait indicators in assessing personality traits. First, openness is the personality trait of a person attracted to new things. Second, conscientiousness is a person's personality who is careful in doing something new or full of considerations in deciding. Third, extraversion is a person's comfort level in interacting with others. Fourth, agreeableness is an individual who tends to be more obedient and more amenable to others and has a personality type that avoids conflicts. Fifth, neuroticism is the trait disposition to experience negative effects, including anger, anxiety, self-consciousness, irritability, emotional instability, and depression (Widiger, 2009).

2.2. Financial literacy

The second concept in this study is financial literacy, which is basic knowledge in managing financial resources (Pandey et al., 2022). Financial literacy refers to learning about an idea and procedure in finance (Amagir et al., 2020). Financial literacy is making the right decision in choosing a form of financial investment that meets expectations (Chhatwani, 2022). Adequate financial literacy can provide the essence for using financial efficiency as needed. Individuals who understand finances will make better decisions than those who understand them less. With financial literacy, a person can quickly understand the financial market and the obstacles that occur, to eliminate or minimize these obstacles (Hsiao & Tsai, 2018). Financial literacy can be expressed by a person's ability to understand financial concepts and provide individual skills to make decisions in investing (Chen et al., 2023).

Financial literacy enables a person to make choices about financial products. Individuals who understand finance tend to seek and use relevant information and also make better use of data (Fanta & Mutsonziwa, 2021). Financial literacy is the ability to understand and analyze choices in financial planning, plans, and investment determination, and respond to an event about finance (Philippas & Avdoulas, 2020). Financial literacy is knowledge, skills, and beliefs that influence attitudes and behaviors to improve the quality of decision-making and financial management to achieve well-being. Financial literacy is a person's ability to know and understand financial products and risks in making the right decisions in effective financial management (Lontchi et al., 2022).

Financial literacy facilitates effective decision-making and can guide financial behavior to achieve financial security and well-being (Sing & Lee, 2020; Shkvarchuk & Slav'yuk, 2019). Financial literacy aims to improve the quality of individual financial decision-making and the occurrence of changes in personal attitudes and behaviors in financial management for the better, especially among high school students (Amagir et al., 2020). For this reason, it is necessary to have financial literacy for every individual to be wiser in managing their finances and dare to decide to invest. Financial literacy requires intelligence and innovation when it comes to making long-term investments (Lewandowska et al., 2021). According to Schuhen et al. (2022), financial literacy involves individual competencies, including debt, creation of wealth, insurance and taxes, monetary transfers, and monetary policy. Financial literacy also enables individuals to impact environmental and social development Gedvilaite et al., 2022).

2.3. Investment risk

~~Risk can be expressed as an activity that has decreased in value from how it should be.~~ The risk in determining decisions in crowdfunding is determined by investment, legal, and technological factors (Wasiuzzaman et al., 2022). The risk that individuals have in some types of investments is the value obtained below the return-on-investment value for which there is no risk. ~~The amount of risk determines the amount of return for investors~~. Financiers will have high expectations for the capital provided if they have high risk. In other words, the higher the level of risk, the higher the rate of return expected (Van Dinh, 2021). Investors will consider the magnitude of the level of risk compared to the rate of return in making decisions. The risk investors face is uncertain, so the chances of generating real value can differ from the expected results. When a financial decision-maker consistently establishes high outcome expectations and results fall below expectations, the financial decision-maker feels less disappointment (Grable & Kwak, 2021). Song et al. (2021) state that investment risk may be generated by investing, whether it is good or bad. Investment risks in the property sector include swelling costs and delays in completing projects (Jagun, 2020).

2.3. Financial decision

The financial decision involves using available funds to make investments

by choosing one or more alternative purchases. A company makes financial decisions by considering the value of the return and the level of risk (Van Dinh, 2021; Lewandowska et al., 2021). Individual decisions in determining business investments should employ financial literacy skills (Lontchi et al., 2022). Significant investment and legal risks determine the decision to invest in a crowdfunding business, but technological threats have no impact (Wasiuzzaman et al., 2022). Investment decisions are used in determining available resources to obtain more significant future gains (Ahmad & Shah, 2022; Pak & Mahmood, 2015). Investors strive to make optimal investment decisions. Subjective and objective factors determine the return on investment. (Song et al., 2021). Financial decisions are determined by the amount of information obtained about the company designated as an investment object, related to the company's economic, social, and environmental performances (Nga & Yien, 2013).

2.5. Relationships between research constructs

Financial literacy impacted mortgage delinquency with personality traits as a moderation variable during the Covid-19 pandemic (Chhatwani, 2022). A person's personality in the form of overconfidence negatively affects investment decisions (Ahmad & Shah, 2022). Personality traits have an impact on a person's ability to increase financial literacy to be able to determine investment decisions (Pak & Mahmood, 2015). Personal responsibility affects financial literacy by positively contributing to making people better at handling their financial resources (Schuhen et al., 2022). The personality of investors determines the understanding of financial investment (Agyemang & Ansong, 2016). Personality traits impact cash management in the SME industry, which contributes to the economy (Zheng et al., 2022). Helena and Widjaja (2022) stated that neuroticism is a person's personality in withstanding pressure or emotions. The positive trait of neurotic behavior or the so-called emotional stability is that an individual with stable emotions tends to calm down when facing problems. So, it can be concluded that personality traits are related to emotional stability. Likewise, financial literacy guides financial behavior, possibly improving financial security and well-being (Sing & Lee, 2020).

H1: Personality traits influence financial literacy.

A personality has a tolerance zone in accepting risk because each individual is different in the level of resilience of financial risk tolerance (Hermansson & Jonsson, 2021). One of the ways for a person to make financial decisions to avoid risks is to manage feelings of disappointment and reduce expectations to generate returns (Grable & Kwak, 2021). Personality traits, composed of agreeableness, extraversion, conscientiousness, neuroticism, and openness, determine the investment risk level investors choose (Pak & Mahmood, 2015). The ability of individuals to adjust their expectations and understand financial concepts can lead to safer investment choices (Corsini & Giannelli, 2021). Personality traits also positively impact financial literacy in deciding money allocation (Jain et al., 2022). Investors tend to increase their trades, influenced by personality traits such as openness, extraversion, neuroticism, and agreeableness. Conscientiousness, on the other hand, has the opposite result (Tauni et al., 2017b).

H2: Personality traits influence investment risk.

Personality traits impacted the investment performance of 983 respondents in India (Akhtar & Das, 2020). An individual's personality in maintaining communication and interacting with others impacts investment decision-making (Pak & Mahmood, 2015). Adequate risk perception influences investment decisions (Ahmad & Shah, 2022). Agreeableness negatively and significantly affects investment decisions, as do extraversion and conscientiousness; neuroticism does not affect investment decisions. Openness to experience positively affects investment decisions (Pak & Mahmood, 2015). Personality traits with the prominent five personalities, extraversion, neuroticism, conscientiousness, agreeableness, and openness to the experience, positively impact investment intention because they can help predict and explain individual decisions (Jain et al., 2022). Individual shareholders often uphold values and honesty, and desire a comfortable life and family security, all of which play important roles in investment decision-making (Agyemang & Ansong, 2016). Personality traits can significantly increase the amount of investment (Tauni et al., 2017b). The values and ideologies of individuals will determine how to decide on an investment by considering the risks that will occur (Shahid et al., 2023).

H3: Personality traits influence financial decisions.

A person who understands derivatives markets can minimize the barriers to making investments (Hsiao & Tsai, 2018). Basic financial literacy impacts an investor's risk preference (Chen et al., 2023). Financial literacy is the basic skill of determining suitable investments and financial arrangements and storing financial resources (Pandey et al., 2022). Financial literacy is understanding and analyzing options to avoid risks by making the right decisions (Philippas & Avdoulas, 2020). The understanding of financial literacy affects the investment risk carried out by considering necessary calculations (Mushafiq et al., 2021). Malaysian respondents had prior knowledge of equity crowdfunding, which impacted their understanding the risks faced when making investments (Wasiuzzaman et al., 2022). A person's ability to understand a company's performance will determine whether or not to invest (Nga & Yien, 2013). Financial literacy positively influences investment decisions (Ahmad & Shah, 2022). Financial literacy can determine the business funding of entrepreneurs through considering the business risks that occur (Lontchi et al., 2022).

H4: Financial literacy influences investment risk.

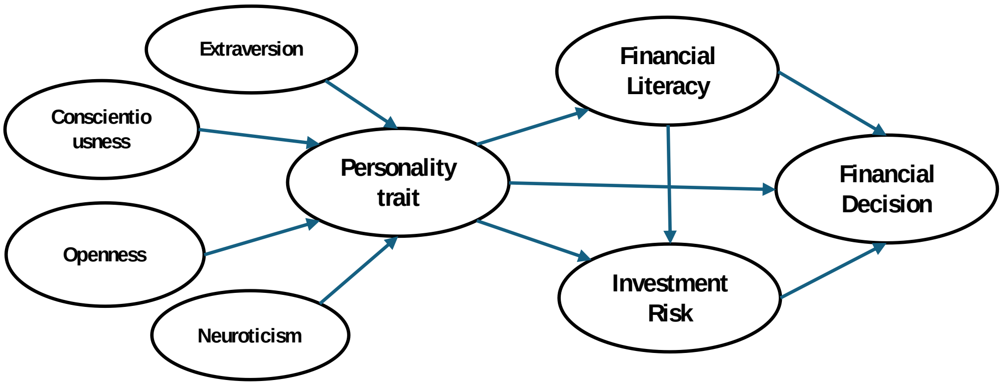
Financial literacy plays a vital role in determining investment decisions that follow risk acceptance through the personal understanding of a person involved in investment transactions (Pak & Mahmood, 2015). A person's understanding of financial literacy impacts making the right decisions in removing obstacles (Hsiao & Tsai, 2018). Financial literacy education needs to be improved to empower young individuals to adequately manage their finances (Gedvilaite et al., 2022). Financial literacy is understanding and analyzing financial planning to determine appropriate investments (Philippas & Avdoulas, 2020). Financial literacy is influential in determining effective decision-making and guiding financial behavior to achieve financial security and well-being (Ho & Lee, 2020). Cognitive ability is essential in determining investment decisions (Mushafiq et al., 2021). However, research also indicates that financial literacy does not influence investment decisions due to irrational behavior and a general lack of sound financial skills (Kasoga, 2021).

H5: Financial literacy influences financial decisions.

Financial risk tolerance involves the maximum amount that a person can receive in the form of returns to determine financial decisions (Hermansson & Jonsson, 2021). The risk associated with investing in a project is determined by the feasibility and viability of the appraisal process to make a financial decision so that costs do not overrun the predetermined budget (Jagun, 2020). This determines the investment decisions regarding the investment risks that will occur by performing essential and adequate calculations (Mushafiq et al., 2021). The level of risk determined by investors always requires a degree of proportionality between risk and a higher return (Van Dinh, 2021). The risks determine financial decisions in crowdfunding, namely investment, legal, and technology risks (Wasiuzzaman et al., 2022). A person's risk tolerance can impact investment decisions (Kasoga, 2021). Investment risk can influence a decision (Shahid et al., 2023; Dinu & Bunea, 2022).

H6: Investment risk influences financial decisions

Based on the above description and argument on the relationship between constructs, Figure 1 demonstrates the research model.



Sources: own research

Fig. 1. Research Model

3 RESEARCH OBJECTIVES, METHODOLOGY, AND DATA

The population database comprises 1,300 investors who voluntarily joined a private Indonesian investor club. The investors are also employees in several companies who already have investments in the form of shares. The survey used a questionnaire designed with a five-point Likert scale. The questionnaires were distributed using a Google form link through social media such as WhatsApp, Line groups, and e-mail. The minimum sample required is 100, using Slovin's formula. However, the authors distributed the Google form link to all 1,300 investor club members. In the end, 455 questionnaires were considered valid for analysis. This sample size is considered adequate and appropriate for using the partial least square technique.

Measurement indicators for personality traits are adapted from the research by Tauni et al. (2017a), Akhtar et al. (2018), Tauni et al. (2018), and Zheng et al. (2022), consisting of big five dimensions with indicators as follows. Openness is measured using as many as five items, namely the level of creativity (Op1), receptivity to new things (Op2), new challenges (Op3), wanting to know new things (Op4), and finding new ideas (Op5). Conscientiousness is assessed using four items: good planning (Co1), being on time (Co2), being able to complete on schedule (Co3), and paying attention to detail (Co4). Extraversion has four items: actively watching stock developments (Ex1), often talking about stocks with others (Ex2), being passionate when talking about stocks (Ex3), and sharing stock information (Ex4). Agreeableness has five items: wisdom (Ag1), caring (Ag2), empathy (Ag3), being happy to help others (Ag4), and having high self-confidence (Ag5). The last dimension, neuroticism, used five items of stable emotions: (Ne1), ability to overcome stress (Ne2), ability to overcome sadness (Ne3), ability to overcome feelings of pressure (Ne4), and ability to control worry (Ne5).

Financial literacy with five items has been adjusted to stock investment conditions using the research of Lontchi et al. (2022), namely, the high-return investment will also be high-risk (FI1), using part of the income for investment (FI2), saving part of the income (FI3), spending money as needed (FI4), and paying attention to the needs of tomorrow (FI5). Investment risk is determined with five items by adopting research conducted by Aren et al. (2021) namely avoiding risky investments when positive results (RI1), being able to make investment decisions when negative results (RI2), being able to make investment transactions with small risks (RI3), investments with small risks are delightful (RI4), and determining investments that have significant risks is pleasant (RI5). Finally, the financial decision five items are based on the research of Nga and Yien (2013), namely having risk tolerance in investment (FD1), avoiding risks in investment (FD2), having adequate information (FD3), paying attention to the performance of issuer shares (FD4), and paying attention to the social performance of issuer stocks (FD5).

Data was collected using Google Forms from February 2020 until December 2022 during the COVID-19 pandemic. The link was distributed through e-mail and social media (WhatsApp and Line). The e-mail address and social media contact information were obtained from official sources, such as investors' databases and the community.

To analyze the data and test the hypotheses of this article, we used a multi-analytic methodology using partial least squares modeling (PLS-SEM). PLS-SEM is a variance-based statistical analytical model used for hypothesis testing using SmartPLS (Binsawad, 2020). It allows the estimation of unobservable latent variables while establishing dependent linear relationships. It is used to identify pathways between endogenous and exogenous constructs (Hair et al., 2014). We chose this model because it works well when the data sample is heterogeneous and reasonably small, and the theoretical model can be defined as causal and complex. The decision to work with PLS-SEM to assess the model's relationships was based on its ability to provide the necessary balance between explanation and prediction (Shmueli, 2010). As the core of our research hypotheses was their causal explanations, our model was simultaneously expected to have good predictive relevance and provide relevant managerial implications. Therefore, it was designed to estimate the impact of personality traits on financial decisions through financial knowledge and investment risk. We also considered PLS-SEM, focusing on prediction as the best choice for data analysis. We used SmartPLS software version 3.0 to estimate individual model parameters. Numerous studies show that PLS-SEM has been successfully applied in various business and information systems studies (Binsawad, 2020; Buendía-Martínez & Monteagudo, 2020; Hair et al., 2014; Shmueli, 2010; Weihong et al., 2021). This paper relied on a structural equation modeling approach to examine the measurement model and the relationship between constructs.

Six hypotheses have been developed based on the literature review to answer the research questions defined in the Introduction. The next stage empirically examines the hypotheses by analyzing the collected data using SmartPLS software version 4.0. The six hypotheses are as follows. H1: Personality traits influence financial literacy, H2: Personality traits influence investment risk, H3: Personality traits influence financial decisions, H4: Financial literacy influences investment risk, H5: Financial literacy influences financial decisions, and H6: Investment risk influences financial decisions.

4 RESULTS AND DISCUSSION:

The empirical data analysis examines the research model in terms of measurement item validity and reliability. When the measurement model is considered valid and reliable, the next stage is to examine the six hypotheses formulated—the expected result from which all hypotheses are supported by collected empirical data. However, before the stages, it is necessary to see whether the respondents' predetermined criteria are met. Table 1 demonstrates the respondent profile in terms of gender, age, occupation, stock investment value, and average monthly income.

Table 1. - Profile of respondents. Source: own research

Variable	Description	Frequency	%
Gender	male	123	27%
	Female	332	73%
Age	17-25 years old	86	19%
	26-30 years old	81	18%
	31-35 years old	45	10%
	36-40 years old	43	9%
	41-45 years old	82	18%
	46-50 years old	98	22%
	over 50 years old	20	4%
Occupation	Student	76	17%
	Professional	119	26%
	government employee	101	22%
	Entrepreneur	150	33%
	Retired	9	2%
Stock investment value	less than IDR 5 million	124	27%
	IDR 5 ≤ Invest ≤ 10 million	102	22%
	IDR 10 < Invest ≤ 20 million	89	20%
	IDR 20 < Invest ≤ 50 million	70	15%
	IDR 50 < Invest ≤ 100 million	45	10%
	above IDR 100 million	25	5%
Average monthly income	less than IDR 5 million	112	25%
	IDR 5 ≤ Invest ≤ 10 million	169	37%
	IDR 10 < Invest ≤ 20 million	87	19%
	IDR 20 < Invest ≤ 50 million	69	15%
	above IDR 50 million	18	4%
Total		455	100%

Note. IDR stands for Indonesian Rupiah.
Source: The study data analysis results

The majority of the respondents were male - 332 respondents (73%). Based on Table 1, the respondents aged 46-50 years old were 98 respondents (22%), followed by 17-25 with 86 respondents (19%). The respondents' occupations included professionals and entrepreneurs, totaling 150 respondents (33 %) and 119 respondents (26%). The stock investment value on the Indonesian stock exchange, less than IDR 5 million, was listed by 124 respondents (27%), and investment value between IDR 5 ≤ Invest ≤ 10 million by 102 respondents (22%), and those with an investment value above IDR 20 million by 140 respondents (30 %). The income per month is mainly at IDR 5 ≤ Invest ≤ 10 million with 169 respondents (37 %), followed by less than IDR 5 million income by 112 respondents (25 %), and more than IDR 20 million by 87 respondents (19 %).

Tables 2 and 3 demonstrate the measurement model test result, dealing with validity and reliability. The validity of the item is assessed using factor loading. An indicator is considered valid when the factor loading exceeds 0.50. Based on these criteria, all items are considered valid. The second assessment for the measurement is the reliability of each construct, measured using Cronbach alpha, which should be greater than 0.70, composite reliability greater than 0.70, and average variance extracted (AVE) greater than 0.50.

Tab. 2 – Measurement model items.

Items	**Factor Loading**	**Composite Reliability**	**Cronbach Alpha**	**AVE**
Personality traits openness		0.871	0.815	0.577
Level of creativity (Op1)	0.807			
Receptive to novelty (Op2)	0.803			
New challenge (Op3)	0.686			
Want to know new things (Op4)	0.824			
Find new ideas (Op5)	0.665			
Personality traits conscientiousness		0.862	0.785	0.612
Good planning (Co1)	0.808			
Timing well (Co2)	0.883			
Able to complete on schedule (Co3)	0.767			
Pay attention to detail (Co4)	0.653			
Personality traits extraversion		0.850	0.769	0.587
Actively see the development of stocks (Ex1)	0.719			
Often talk about stocks with others (Ex2)	0.727			
Full of passion when talking stocks (Ex3)	0.787			
Share Information (Ex4)	0.825			
Personality traits agreeableness		0.898	0.858	0.638
Wise (Ag1)	0.820			
Have a sense of care (Ag2)	0.792			
Empathize (Ag3)	0.839			
Happy helping others (Ag4)	0.797			
High self-confidence (Ag5)	0.741			
Personality traits neuroticism		0.887	0.842	0.613
Stable emotions (Ne1)	0.775			
Able to overcome stress (Ne2)	0.801			
Able to cope with sadness (Ne3)	0.851			
Able to overcome pressure (Ne4)	0.750			
Able to control anxiety (Ne5)	0.732			

Table 3. Measurement Model Item (continued)

Items	**Factor Loading**	**Composite Reliability**	**Cronbach Alpha**	**AVE**
Financial literacy		0.886	0.841	0.608
The high-return investment will also be high-risk (FI1)	0.737			

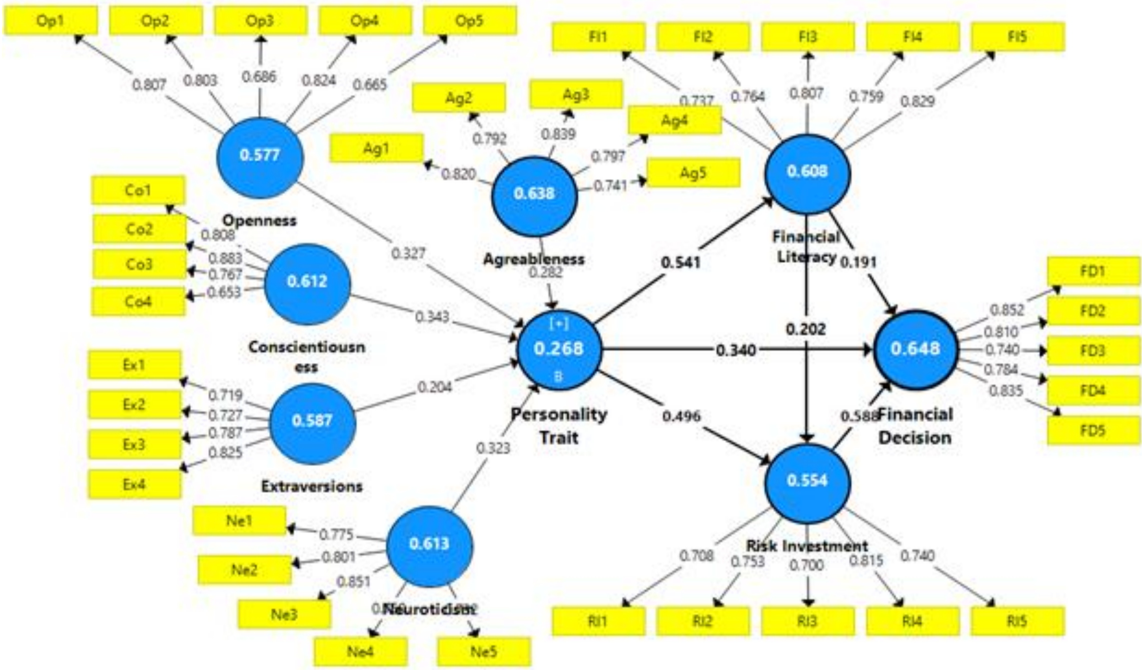
Using a portion of income for investment (FI2)	0.764			
Saving a portion of income (FI3)	0.807			
Spending money as needed (FI4)	0.759			
Pay attention to tomorrow's needs (FI5)	0.829			
Investment risk		0.861	0.798	0.554
Avoid risky investments when yields are positive (RI1)	0.708			
Able to make investment decisions when negative returns (RI2)	0.753			
Able to make investment transactions with a small risk (RI3)	0.700			
Investment with minimal risk is enjoyable (RI4)	0.815			
Determining investments that have significant risks is a pleasant thing (RI5)	0.740			
Financial decision		0.902	0.866	0.648
Has risk tolerance in investment (FD1)	0.852			
Avoid risks in investing (FD2)	0.810			
Have adequate information (FD3)	0.740			
Pay attention to the performance of issuer shares (FD4)	0.784			
Pay attention to the social performance of issuer stocks (FD5)	0.835			

Source : Data analysis result

Based on the results in Tables 2 and 3, the measurement items of all variables are considered reliable. Another measurement for the research model uses the value of Q2 as the goodness of fit measurement, calculated based on the value of R2 as follows: Q2: 1-[(1-R_1^2)(1- R_2^2)(1- R_3^2)(1- R_4^2). The value of R^2 for each variable is obtained from the analysis result. Then the value of Q2: 1− [(1–0.992) x (1–0.293) x (1–0.275) x (1–0.375)] = 0.9974 = 99.74%. This result indicates the predictive relevance of the model, which implies that the research model reflects 99.74% of the data. The acceptance criteria for the Q^2 value is greater than 0.0.

As shown in Figure 2, the model is a second-order model, which means that the personality traits are formed by five dimensions, i.e., openness, conscientiousness, extroversion, agreeableness, and neuroticism. The weight of each dimension indicates the extent to which the dimension forms the personality trait. In this case, conscientiousness has the most significant weight, followed by openness. Meanwhile, in financial literacy, the dominant factor is determined by investment risk, with the financial decision being the most significant loading factor. The conclusion of Tables 2 and 3 is that the measurement items are all considered valid and reliable. Hence, further analysis and hypothesis testing can proceed.

The results of the research hypothesis test are shown in Figure 1 and Table 4 by obtaining the path value of the coefficient and the t-statistical value or p-value.



Source: SmartPLS data analysis result

Fig. 2 – The research model with the analysis result

Table. 4 - Direct path coefficient.

Direct Coefficient	Path Coefficient	*t-value*	*p*-values
Agreeableness -> Personality Trait	0.293	10.236	.000
Conscientiousness -> Personality Trait	0.334	12.593	.000
Neuroticism -> Personality Trait	0.343	12.582	.000
extraversions -> Personality Trait	0.193	7.490	.000
Openness -> Personality Trait	0.291	11.851	.000
Personality Trait -> Financial Literacy (H1)	0.612	21.774	.000
Personality Trait -> Investment Risk (H2)	0.319	7.712	.000
Investment Risk -> Financial Decision (H3)	0.528	9.489	.000
Financial literacy -> Investment Risk (H4)	0.455	12.140	.000
Financial Literacy -> Financial Decision (H5)	0.191	7.472	.000
Investment Risk -> Financial Decision (H6)	0.528	8.472	.000

Source: Hypotheses test result

Based on Figure 2 and Table 4, the first hypothesis (H1) is that personality traits influence the financial literacy of 0.612 with t-statistics of 21,774 greater than 1.96 and a p-value of 0.000 < 0.005, so the hypothesis is accepted. Investors' personalities can increase financial literacy, indicated by the increasing ability to save and prepare for future needs. The results of this study support the results of research that states that personality traits can have an impact on financial literacy (Chhatwani, 2022; Ahmad & Shah, 2022; Pak & Mahmood, 2015; Schuhen et al., 2022; Agyemang & Ansong, 2016; Zheng et al., 2022 and Sing & Lee, 2020).

The second hypothesis (H2) shown by personality traits has an influence of 0.319 on investment risk obtained a t-statistics value of 7,712 and a p-value of 0.000, and thus the second hypothesis is accepted. Investors' personality traits, including the five dimensions, can significantly influence investment risk. Investors can identify investments with small risks so that they have a pleasant impact, and large investment risks can be anticipated. The results of this study support the results of research that states that personality traits have a positive and significant influence on investment risk (Hermansson & Jonsson, 2021; Grable & Kwak, 2021; Pak & Mahmood, 2015; Corsini & Giannelli, 2021; Jain et al., 2022; Tauni et al., 2017a, 2017b).

Testing the third hypothesis (H3), personality traits influence the financial decision of 0.316 with a t-statistical value of 2,400 and a p-value of 0.017; the third hypothesis is therefore accepted. Personality traits of investors can result in risk tolerance in investments and cause investors to pay attention to the social performance of issuer stocks as a form of financial decision. The results of the study support the results of research that states that personality traits influence financial decisions (Akhtar & Das, 2020; Pak & Mahmood, 2015; Ahmad & Shah, 2022; Jain et al., 2022; Agyemang & Ansong, 2016; Tauni et al., 2017b; Shahid et al., 2023).

Financial literacy affects investment risk in the fourth hypothesis (H4), obtaining a value of 0.455 with a t-statistic of 12,140 and a p-value of 0.000. This shows that investors are financially literate enough to calculate the lowest risks and generate high profits. The results of the study support the results of research that state that financial literacy influences investment risk (Hsiao & Tsai, 2018; Chen et al., 2023; Pandey et al., 2022; Philippas & Avdoulas, 2020; Mushafiq et al., 2021; Nga & Yien, 2013; Ahmad & Shah, 2022; Lontchi et al., 2022).

For the fifth hypothesis (H5), financial literacy positively influences financial decisions by 0.191 with a t-statistic of 7,472 and a p-value of 0.000, so the fifth hypothesis is accepted. Financial literacy, shown by investors' ability to save part of their income and pay attention to future needs, can impact financial decisions. These results support the results of research that state that financial literacy has a positive influence on financial decisions (Pak & Mahmood, 2015; Hsiao & Tsai, 2018; Gedvilaite et al., 2022; Philippas & Avdoulas, 2020; Ho & Lee, 2020; Mushafiq et al., 2021; Kasoga, 2021).

Concerning the sixth hypothesis (H6), investment risk has an influence of 0.528 on financial decisions with a t-statistic of 7,472 and p-value of 0.000; thus, the sixth hypothesis is accepted. Investment risk affects investment decision-making. The investor always considers the risk before making investment decisions. The results of this study follow previous studies that stated that investment risk influences financial decisions (Hermansson & Jonsson, 2021; Jagun, 2020; Mushafiq et al., 2021; Van Dinh, 2021; Wasiuzzaman et al., 2022; Kasoga, 2021; Shahid et al., 2023).

Based on Figure 2 and Table 3, graciously demonstrated and empathetic agreeableness is the most significant loading factor, with a personality trait score of 0.293. Conscientiousness, described as good planning and timing, had a positive and significant impact of 0.334 on personality traits. Neuroticism, which is described as the ability of an investor to overcome stress and sadness, has a personality trait score of 0.343, and is therefore significant as well. Indonesian investors are enthusiastic when talking about stocks and sharing stock information as a form of extraversion. This influences personality traits positively and significantly. Openness, with measurement items of curiosity and creativity, can positively and significantly influence the personality trait. Thus, personality traits are all significant in relation to investing.

5 CONCLUSIONS

Financial decisions for investors are essential in considering the balance between risks and returns when investing. The results indicated that openness, conscientiousness, extraversion, agreeableness, and neuroticism constitute personality traits. A person's personality is unique, so an adequate understanding of financial literacy is needed when investing in Indonesian stocks. Personality traits, with the most significant loading factor being the ability of investors to save part of their income and pay attention to future needs, can impact investment risk and financial decisions. The financial literacy of stock market investors positively impacts the anticipated investment risk. Financial literacy also impacts understanding and making financial decisions. This provides comfort and certainty for investors, because they understand the risks. This study also recognized that the investment risk impacts financial decisions. The ability of investors to understand financial literacy is key so that they can consider the risks when investing and make alternative rational decisions. This study needs to add adequate information factors to investments so that the risks can be sufficiently calculated.

The results' practical implications are to provide insight to financial consultants so that they in turn can provide financial literacy to individuals with different personalities when making investments. The study's theoretical contribution is to enrich the theory of financial behavior in identifying investments that provide relatively low risk that investors can tolerate and relatively better returns.

This study has limitations, particularly in the population. It is limited only to individual investors from Indonesia without differentiating between cultures and generations, such as millennials and elderly investors. They perhaps have different preferences in investing. Increasing the scope in these ways will provide insight for the investment manager in targeting the appropriate market segment.

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