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THE NEXUS BETWEEN FINANCIAL LITERACY, RISK PERCEPTION AND INVESTMENT DECISIONS: EVIDENCE FROM INDONESIAN INVESTORS

Abstract

Financial literacy is an essential factor for individuals or households in making investment decisions. However, the problem of insufficient financial literacy is still considered one of the factors limiting the creation of successful investments, especially in relation to risk perception. Some investors have financial losses due to their limited financial literacy, making inefficient investment decisions and implicating high-risk investment choices. Hence, this study aims to explore the interconnection between financial literacy, risk perception and investment decisions. Moderated regression analysis was used for 233 investors in Indonesia who completed financial management training. The results showed that financial literacy has a positive and significant impact on investment decisions, which means that it could be used to improve the quality of investment decisions. On the other hand, risk perception as a moderating variable weakened the impact of financial literacy on investment decisions; this confirmed the consistent results before and after financial training. Overall, financial literacy across three dimensions (knowledge, skills, and attitude) plays an important role in investors allocating more funds to investment instruments than respondent groups with lower financial literacy levels. In addition, the level of financial literacy also influences the choice of investment product.

Keywords

finance, literacy, knowledge, risk perception, investment decision

JEL Classification

G32, G34

INTRODUCTION

The problem of low financial literacy remains central in Indonesia. According to Klapper et al. (2015), the level of financial literacy among adults in Indonesia has reached only 32%, which is lower than some developed countries in the world. On the other hand, the 2022 National Financial Literacy and Inclusion survey noted an increase in financial literacy to 49.68% from 2019, which was only 38.03%. The COVID-19 pandemic is one of the main factors that accelerated the enhancement of financial literacy in Indonesia (Indonesian Financial Services Authority, 2022). Although there is an increase in financial literacy compared to the previous year, Indonesia as one of the emerging countries recorded a significant investor increase yearly. The most significant increase in SID (single investor identification) was between 2020–2023. Referring to the IDX (Indonesia Stock Exchange) website, Indonesia's number of SIDs in January 2024 reached around 12.33 million. Given Indonesia's relatively low financial literacy, the rapid growth calls for special attention. This indicates that some investors risk financial losses due to their limited financial literacy. The rapid development of technology increases the access and exposure of financial market investments to the public, implicating the investor de-

cision for investment. This advantage could enhance the assessment of investment opportunities as investors encounter many aspects, including the macroeconomic environment, company performance, industry trends, and psychological factors that impact individual decision-making (Tran et al., 2019). Individuals with a limited understanding of financial concepts and principles frequently need help in effectively handling their debt (Lusardi & Tufano, 2015). Investment products such as stocks, bonds, and mutual funds could be accessed by clicking on smartphone apps. However, some novice investors sometimes need more financial literacy (mainly regarding investment products).

Financial literacy is essential for individuals and households in making decisions regarding asset investments and credit limits (Jappelli, 2010). Financially educated households can effectively allocate financial resources, select suitable financial instruments and services, prepare budgets, and save money. Therefore, financial stability, household welfare, and better financial literacy are expected to rise. Nye and Hillyard (2013) argued that financial literacy is a benchmark for one's level of understanding in terms of financial concepts and ability to manage personal finance through appropriate short-term decision-making and long-term financial planning amid changing economic conditions. Boon et al. (2011) investigate the relationship between financial literacy and personal financial planning. The results show that most individuals do not possess financial plans due to inadequate financial literacy. According to Jacob et al. (2000), financial illiteracy leads to vulnerability of individuals toward losses due to emergencies, over-indebtedness, or even fraud. It might cause fatal damage to households' financial condition. Gupta (2017) argued that financial literacy consists of skills and knowledge that enable a person to understand financial principles in effective and efficient decision-making. Financially uneducated investors cannot make efficient investment decisions (Mitchell & Lusardi, 2011). Therefore, investors also consider potential dangers before making high-risk investment choices.

1. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Numerous literatures are relevant to financial literacy and investment decisions, including risk perception. Khan (2016) discovered that individuals with little income and inexperienced investors tended to possess a pessimistic view of risk while making investment choices. Inadequate financial literacy might have detrimental consequences for a broader scope. A real example is the global financial crisis of 2008 (subprime mortgage), which resulted from over-innovation in financial products and over-complexity in the financial market. A complex financial market requires better financial literacy so the public will know certain investment products. Financial literacy could become a good foundation for investors in managing risks and making rational investment decisions. Most of the time, investors are focused on investment returns without considering risks. Braunstein and Welch (2002) revealed that the phenomena might happen in both developed and developing countries. Several previous empirical studies concluded

a significant effect of financial literacy on investment decisions (Al-Tamimi & Kalli, 2009; Lusardi & Mitchell, 2007; Rooij et al., 2007). The dual process theory and life cycle theory are the foundations for explaining the phenomenon.

Dual process theory states that individual behaviors are determined by two factors, namely, intuition and cognition. Stanovich and West (2000) argued that intuition is the first system with the following traits: instant, fast, and unconscious. Conversely, cognition is the second system that is slow, controlled, and conscious. The cognitive system generates rational thought and analysis required to implement an excellent financial investment strategy. When decision-making is associated with dual process theory, intuition is associated with representativeness (De Bondt & Thaler, 1985) and framing (Tversky & Kahneman, 1981). In the realm of financial and economic research, empirical reviews that involve dual process theory are scarce.

Generally, life cycle theory explains humans' consumption and saving behaviors during their lifetime. Modigliani (1966) developed the theory using several assumptions about human behav-

iors. Firstly, humans tend to be future-oriented in terms of their lifetime. Secondly, humans can predict the amount of financial resources they possess throughout their lives. Thirdly, they understand the financial resources they need at every life stage. Lastly, they are wise when it comes to spending money. The life cycle hypothesis states that humans tend to be future-oriented regarding the resources they receive and spend at every life stage. In other words, the theory assumes financial resources as a medium for transferring resources to different periods during a lifetime.

Investment is an essential aspect of personal financial planning. Cash does not possess an investment function (non-earning asset). Hence, it must be allocated to other instruments that are more profitable (Cumming et al., 2007). This condition encourages academicians and governments in every nation to develop financial literacy education and training/seminar programs for the public. Boonie et al. (2005) explained the importance of investing in the present because of rising life expectancy, while income level rises slower. To properly manage investment portfolios, investors need financial expertise in identifying opportunities, assessing risks, evaluating, implementing, and monitoring investment outcomes.

Wamae (2015) investigated financial literacy and its effect on personal financial management. By observing bankers in Nairobi, it is found that financial literacy positively affects personal financial management, leading to higher investment returns. The study suggests that banks in Kenya conduct financial literacy programs that aim to improve public welfare. Another study by Suwanaphan (2013) analyzes the literacy level and financial behavior of 400 academic support employees from Chiang Mai University. The study concluded that respondents with lower financial knowledge tend to possess fallacious financial perceptions. Calvet et al. (2007) concluded that financially intelligent individuals buy risky assets and invest efficiently.

Nyamute and Maina (2010), on the other hand, show a significant difference in financial management practice between groups of respondents who are financially shrewd and those who are not. Financially shrewd respondents tend to appreciate and implement better financial management

practices. Investments can be defined as allocating funds to financial assets whose value is expected to increase. As the term is future-oriented, risks are inseparable from the decision. The basic concept of investments asserts that the higher the return, the higher the risks. Bhalla (2008) showed that investors must decide how, where, when, and how much capital to allocate to exploit investment opportunities. According to Musundi (2014), investment planning involves systematic investment strategy development and asset allocation. Hence, financial literacy might be helpful for investors in making decisions and obtaining optimal investment returns.

Investors can make more optimal decisions by understanding the types of investment products, risk factors, portfolio diversifications, and financial market insights. Financial knowledge is used as a benchmark to determine how individuals understand financial products. Financial education assists investors in making realistic assessments and financial decisions tailored to their financial understanding. In financial literacy concepts, financial knowledge is a form of investment in human resources (Gallery et al., 2010). Empirical surveys also revealed that individuals must be knowledgeable to become financially literate.

Lack of financial literacy might result in suboptimal financial decision-making and its risky for individuals and communities (Kefel, 2011). As one of the variables in financial literacy constructs, financial knowledge is essential for investors to obtain optimal investment results. Financial knowledge is required to establish a benchmark for financial competencies to achieve competitive advantage (Lusardi & Mitchell, 2006). Financial knowledge can be obtained from experiences, education, training, information from colleagues, families, the internet, and financial and investment news. Knowledge related to financial sectors will be accumulated through information gathered for specific purposes over time. However, financial knowledge is not the sole determinant of investors' success. The ability to apply financial knowledge in the capital market is also crucial.

The complexity of today's financial market provides investors with a wide variety of financial products. Indirectly, investors are forced to pos-

ness knowledge and expertise for evaluating these varied financial instruments. Therefore, basic investment expertise such as assessing risks, identifying investment opportunities, diversifying assets, and monitoring portfolio are required for choosing and purchasing investment products. Beal and Delpachitra (2010) state that financial expertise allows individuals to make more informed decisions regarding the funds that they possess and simultaneously reduce error potentials in financial management. Financial skills can be defined as the ability to apply financial knowledge. Landerretche and Martínez (2013) argue that good financial behaviors are realized through developments in skills and knowledge in making decisions. Individuals with sufficient financial knowledge, expertise, and behaviors are best positioned to seize investment opportunities, perform capital budgeting, and analyze expenses. Wamae (2015) concluded that low financial management skills affect investment returns.

Attitude could be defined as the extent to which an individual evaluates or assesses his/her behavior in a social environment. Attitudes affecting financial behaviors are debt tolerance, over-optimism, certain attitudes toward money, and financial knowledge level. According to Festinger (1954), psychological concepts such as cognitive dissonance and locus of control may affect attitudes toward financial behaviors (e.g., taking loans). According to Furnham (1984), six factors may affect financial behaviors: obsession, power or expenditure, retention, security, insufficiency, and effort or ability. Obsession emphasizes thoughts about different aspects of money. Power or expenditure means that individuals must spend money to be satisfied. Retention implies the unwillingness to spend available funds. Security encourages individuals to manage finances conservatively with the lowest possible risk. Insufficiency, conversely, indicates behaviors when individuals spend money to eliminate feelings of inadequacy. Effort or ability is a condition when individuals feel entitled to their income. Dean et al. (2013) found that personal debt position is determined by attitude or behaviors, not the unavailability of funds. Findings by Davies and Lea (1995) show that individuals with higher expected future income tend to have higher debt tolerance. Besides, young individuals who are still in their careers tend to be more tolerant of debt.

Risk is logical consequences in the investment due its existence cannot be separated from investment products in the financial market. Biais and Weber (2009) defined risk perception as the way investors perceive financial asset risks based on their experiences and interests. Nasic and Weber (2010) found that fund allocation decisions are affected by investors' behavior in taking risks. Various studies have explained the relationship between risk perception and investment behaviors. According to Bhowal (2010), risk perceptions can be managed if an investor is aware of risk aspects and fluctuation level. The absence of risk concepts comprehension might cause investors to make suboptimal investment decisions. Psychological factors such as emotional and cognitive bias may affect the decision-making process of even professional investors. According to Weber and Hsee (1998), an individual's investment decision-making process is strongly influenced by their risk perception level. Huston (2009) and Marcolin and Abraham (2006) found a significant negative relationship between risk perception and investment decision.

Based on several findings, there are interconnections between financial literacy, risk perception and investment decisions. An investor has a rational attitude to select the proper investment. Investors with sufficient knowledge and expertise are not totally immune from the chances of making irrational investment decisions, which are dominated by affective and emotional aspects. An individual's investment behaviors are determined by their attitude and risk perceptions. Hence, the study about the important role of financial literacy, contains knowledge, skills, and attitudes is essential to be explored. The issue of financial perception also be considered as an assessment of investors on their decision to invest. The objective of this study is to investigate the relationship between financial literacy, risk perception, and investment decisions. Some hypotheses were developed as follows:

- H_1 : *Financial literacy based on knowledge, skills, and attitude positively affects investment decisions.*
- H_2 : *Risk perception weakens the influence of financial literacy based on knowledge, skills, and attitude on investment decisions.*

2. METHODS

Data in this study were obtained by conducting surveys among investors in the financial market and business school seniors who have completed courses in financial management, investment management, and international financial management. These groups are chosen because they are more likely to participate, which can provide a better response rate and research results. This study also includes financial training in robustness tests. The variable is vital because it correlates positively with individuals' financial literacy. Financial training in this study includes participation in dissemination, education and intensive training in finance. This study disseminated 285 questionnaires, and 256 were submitted to the author (response rate of 89.8%). 23 out of 256 submitted questionnaires did not meet the sampling criteria and, thus, were excluded from the analysis. Hence, this study examines 233 questionnaires from respondents across Indonesia (Sumatra, Java, Bali, Borneo, Sulawesi, East Nusa Tenggara, Maluku, and Papua). The analysis area coverage in the sample distribution is considered capable of describing Indonesia's general condition because it has covered more than 85% of Indonesia's geographical area. This national survey was conducted with support from several parties, namely researchers' networks and universities, as well as Indonesia's financial community and investors. This study formulates questionnaires based on literature reviews and previous study findings.

There are 38 indicators developed to analyze five main variables in this study. Respondent characteristics such as age, gender, marital status, education level, income level, and financial training participation are identified. The measurement of question indicators uses a Likert scale from 1 to 7 for several variables, namely, financial knowledge, financial skills, financial attitude, investment decision, and risk perception (Keh et al., 2002; Pompian, 2011; Mwathi et al., 2017; Jayantilal, 2017). Financial training is the only variable in this study that used a dummy measurement (1 = participated in the financial training, and 0 = otherwise). Moderated regression analysis was used to assess the risk perception's involvement in explaining financial literacy's effects on investment decisions. The first model examines the influence

of the moderating variable (risk perception) on investment decisions (ID), and the second model analyzes the effects of independent variables on investment decisions. The third model investigates the effects of interaction between independent variables and the moderating variable. The last model examines the consistency of risk perception as a moderating variable through a robustness test involving financial training. These models are presented with econometric equations below:

$$ID_i = \alpha_0 + \beta_1 RP_i + \varepsilon_i, \quad (1)$$

$$ID_i = \alpha_0 + \beta_1 FK_i + \beta_2 FS_i + \beta_3 FA_i + \varepsilon_i, \quad (2)$$

$$ID_i = \alpha_0 + \beta_1 FK_i + \beta_2 FS_i + \beta_3 FA_i + \beta_4 RP_i + \beta_5 FK \cdot RP_i + \beta_6 FS \cdot RP_i + \beta_7 FA \cdot RP_i + \varepsilon_i, \quad (3)$$

$$ID_i = \alpha_0 + \beta_1 FT_i + \beta_2 FK_i + \beta_3 FS_i + \beta_4 FA_i + \beta_5 RP_i + \beta_6 FK \cdot RP_i + \beta_7 FS \cdot RP_i + \beta_8 FA \cdot RP_i + \varepsilon_i, \quad (4)$$

where ID is the Investment Decision, α_0 is constant, β_1 until β_n are the coefficient terms of independent variables, FK is the Financial Knowledge, FS is the Financial Skills, FA is the Financial Attitude, RP is the Risk Perception, FT is the Financial Training, i is the selected respondent, and ε is the residual term.

3. RESULTS

Table 1 presents brief characteristics of 233 respondents in this study, including business school seniors and investors in Indonesia. Most respondents aged 18-35 (55.8%) were male-dominated (60.1%). Most of the respondents are married (60.5%). A total of 183 respondents (78.5%) hold a bachelor's degree, and 75.1% of respondents have a low-income level. In terms of financial training, about half of the total respondents have never participated (55.8%). The observed data are further analyzed through reliability and validity tests to examine research instruments. Before proceeding to the next step, validity and reliability tests must be conducted. Based on Table 2, on average, the Cronbach alpha values of research instruments are shown to be satisfactory. Besides, favorable results also can be seen from questionnaires items' validity test. Therefore, it can be concluded that re-

search instruments used in this study are reliable and valid. At the next stage, basic assumption tests (linearity, heteroskedastisity, and multicollienarity) are conducted.

Table 1. Respondent profiles

Demographic Information	Category	N	Relative Value (%)
Age	18-35 years old	130	55.8
	> 35 years old	103	44.2
Gender	Female	93	39.9
	Male	140	60.1
Marital Status	Single	92	39.5
	Married	141	60.5
Education Level	High School Graduate	50	21.5
	Bachelor	183	78.5
Income Level	Low	175	75.1
	High	58	24.9
Financial Training	Never	130	55.8
	Yes	103	44.2

Referring to the central limit theorem concept, normality tests are not conducted in this study because the number of observations is sufficient. After confirming no violation on basic assumptions, descriptive statistical analysis should begin. In addition, t-test is conducted to assess the investment decision-making behavior difference. The first test is conducted on group of respondents with both high and low level of financial literacy. It is done to confirm whether differences in investment decision-making behavior exist among respondents with different literacy levels, presented

in Table 3. The t-test result shows that there is a significant difference between respondent groups with high and low financial literacy in terms of investment behavior.

The significance level of 1% on the t-test provides strong evidence that a significant difference in investment decision making exists between the two groups. Further, it confirms that respondents with a high level of financial literacy tend to have a more diversified portfolio and longer investment horizon. In the next phase, differences in the average investment portion between the two groups could be discussed. The identification is made by analyzing questionnaire items that inquire about fund allocation on specific investment instruments. The analysis result is shown in Figure 1.

Figure 1 shows that respondents with high financial literacy tend to choose property and gold as their leading investment choices. This result is understandable when the COVID-19 pandemic and the Russia-Ukraine war caused high economic uncertainty. Investors tend to seek relatively safer investment instruments (safe haven). On the other hand, low literacy level groups tend to allocate funds to bonds and stocks. An education program titled Investment Galery from IDX for universities in Indonesia during the last decade is one of the reasons bonds and stocks became popular among respondents, especially college students. Speculative investment instruments such as for-

Table 2. Reliability and validity tests

Financial Knowledge (FK) (Cronbach Alpha = 0.893)		Financial Skills (FS) (Cronbach Alpha = 0.788)		Financial Attitude (FA) (Cronbach Alpha = 0.644)	
Item	r-Value	Item	r-Value	Item	r-Value
FK1	0.823	FS1	0.716	FA1	0.564
FK2	0.835	FS2	0.737	FA2	0.663
FK3	0.807	FS3	0.841	FA3	0.696
FK4	0.731	FS4	0.831	FA4	0.652
FK5	0.689	-	-	FA5	0.653
FK6	0.737	-	-	-	-
FK7	0.620	-	-	-	-
FK8	0.788	-	-	-	-

Table 3. Investment decision-making behavior difference

Description		Levene's Test		t-Test for Equality of Means			
		F	Sig.	t	DF	Sig. (2-tailed)	Mean Difference
ID	Equal variances assumed	2.145	0.144	-2.774	231	0.006***	-6.385
ID	Equal variances not assumed			-1.855	5.114	0.121	-6.385

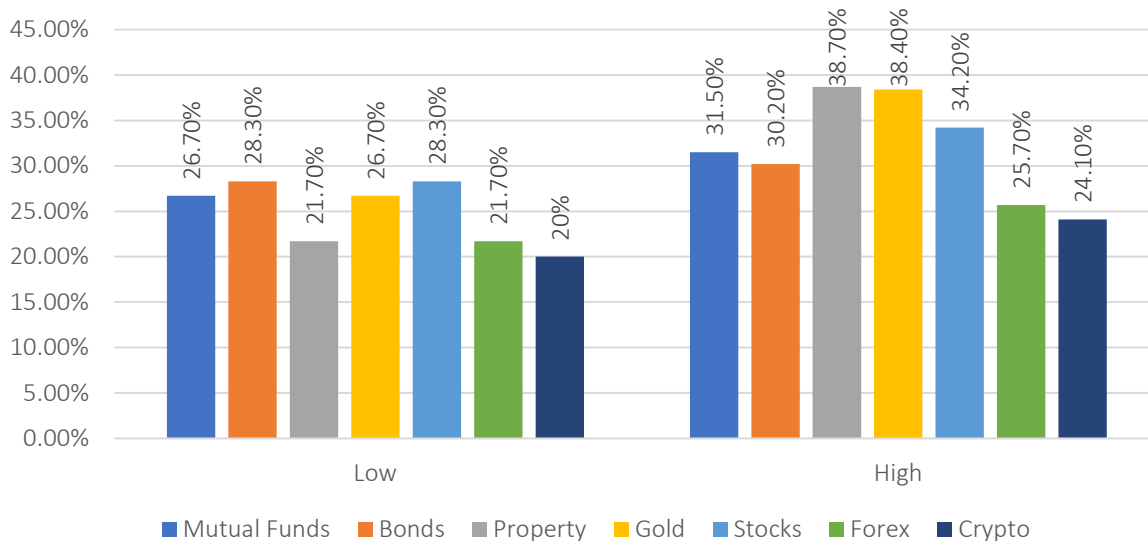


Figure 1. Fund allocation difference in investment instruments

eign exchange and cryptocurrency tend to get the least fund allocation from both groups. It might be caused by high-risk levels from both products, especially during unstable economic conditions. Generally, respondent groups with high financial literacy levels allocate more funds on every investment instrument than the others. These data confirm that financial literacy significantly affects fund allocation levels and variation in investment product choices.

The four models test the two main hypotheses proposed in this study. The statistical result is presented in Table 7. The first model result in Table 7 shows a positive (significant at 1%) relationship between risk perception (RP) and investment decision (ID). The second model tests all independent variables in this study. Based on the result, financial knowledge (FK) and financial skills (FS) have positive effects (significant at 1%) on investment decisions. On the other hand, financial attitude (FA) shows a positive but insignificant effect on ID. Therefore, the result of testing Model 2 provides support for *H1* based on knowledge and skills. The third model is conducted to explain the interaction effect of risk perception (RP) on the influence of FK, FS, and FA to ID. Model 3 test interacts each independent variable with variable RP. The result shows that interaction between RP and FK weakens the influence of FK on ID (significance level reduced from 1% to insignificant). Similar result is also found on the effect of FS on ID (sig-

nificance level reduced from 1% to 5%). A decrease in significance level also occurred in the relationship between FA and ID after interacting with variable RP, where the probability value increased from 0.24 to 0.84; this confirms that statistical result has support for *H2* in this study. The fourth model examines the consistency of risk perception as a moderating variable through a robustness test involving Financial Training (FT). After being intervened with FT, the result shows the interaction effect of RP on financial literacy, which weakens the influence of FK, FS, and FA on ID to ensure consistency (similar results before and after intervention with FT).

Table 4. Empirical results

Variable	(1)	(2)	(3)	(4)
Constant	7,25	3.36	-3.31	-1.15
P-value	(0.00)***	(0.21)	(0.74)	(0.91)
RP	0.59	-	0.61	0.52
P-value	(0.00)***	-	(0.11)	(0.17)
FK	-	0.14	-0.09	-0.11
P-value	-	(0.00)***	(0.34)	(0.25)
FS	-	0.50	0.73	0.69
P-value	-	(0.00)***	(0.00)***	(0.00)***
FA	-	0.11	0.03	0.00
P-value	-	(0.24)	(0.93)	(0.99)
FK*RP	-	-	0.01	0.01
P-value	-	-	(0.13)	(0.17)
FS*RP	-	-	-0.02	-0.02
P-value	-	-	(0.03)**	(0.03)**
FA*RP	-	-	0.00	0.01
P-value	-	-	(0.84)	(0.69)
FT	-	-	-	1.68

Table 4 (cont.). Empirical results

Variable	(1)	(2)	(3)	(4)
P-value	–	–	–	(0.00)***
F	184.63	36.40	35.62	33.16
P-value	(0.00)***	(0.00)***	(0.00)***	(0.00)***
Adjusted R ²	0.44	0.31	0.51	0.53

Note: *, **, and *** show significance levels at 10%, 5%, and 1%, respectively.

A positive and significant 1% relationship between FT and ID indicates that financial training participation needs to be considered for future financial literacy research. Each research model reaches a goodness of fit, where the significance level of the F-test is consistent at 1% for every model. Besides, after being tested in the interaction model, the value of adjusted R² increased from 31% to 51%. Those statistical supports indicate that the research models developed in this study can explain observed phenomena excellently. From Table 4 its also conclude that investment decisions affect not only the level of financial literacy, but also the psychological (in this case, measured with risk perception). Risk perception (RP) statistically shows a pure moderating role in this study, as supported by the insignificant results in model 3 and model 4. In contrast, in model 1, this variable shows a positive and significant influence on ID (significant at 1%).

4. DISCUSSION

There are several discussions about the nexus between variables displayed in Table 7. First, there is a positive and significant relationship between RP and ID. The positive relationship between the two variables is in line with the study by Lusardi and Mitchell (2007). Perception has an essential importance to the risk that exists in any investment instrument related to human behavior in making decisions as perception is the first stage related to the reaction to risk (Aini & Lutfi 2019). Furthermore, the positive impact of two variables, FK and FS, on ID. This result is similar to previous findings (Rasyid et al. 2018; Wangi & Baskara 2021). Investors with a high level of financial knowledge and expertise tend

to have a well-diversified investment portfolio and longer investment horizon, as high financial knowledge makes their decision-making process more complex rather than easier (Dinc Aydemir & Aren 2017). However, FA has no significant impact on ID in this case. It also depends on the respondent characteristics: it was found that majority of respondents are bachelors. With a higher education, a person can decide accurately on proper investments.

Financial attitudes influence how a person saves or spends money and influence personal management of financial problems (Sorongan 2022). Therefore, the impact of FA must be combined with financial knowledge or financial skills. RP also plays an important role as a pure moderating variable for the nexus between FA and ID, decreasing the level of significance. Singh and Bhowal (2008) concluded that investors' investment behaviors are influenced by risk perception, which indicates the higher the risk perception, the higher their demand for investment returns. Additionally, the factor related to financial literacy could be added as one of the variables to strengthen the ID due to a significant relationship between them in case of other country (Al-Tamimi & Kalli 2009).

Individuals may not receive formal financial education because their participation in financial training (in the form of dissemination, education, or intensive courses) is impactful for better investment decision-making behavior. These findings simultaneously confirm dual process theory, which states that cognitive and intuitive factors affect individuals' financial behavior. Cognitive biases such as overconfidence, representativeness, self-deception, illusion of control, and planning fallacy might cause individuals' investment decisions to be irrational. Therefore, apart from being financially intelligent, an investor must also understand his psychological biases to formulate more optimal investment decisions. The discussion supports Gentile et al. (2016), who argue that even individuals with high levels of financial literacy are not necessarily free from the influence of psychological biases.

CONCLUSION

The results of the study show that financial literacy (measured by financial knowledge, financial skills, and financial attitude) positively affects investment decisions. This indicates that the higher the financial literacy of an investor, the more diversified his investment portfolio. To analyze the role of risk perception in investment decision making, this study uses the interaction of the variable with financial literacy. After being interacted, a decrease in significance level occurred on the effect of financial literacy on investment decisions. The result confirms the risk perception hypothesis developed in this study, where, statistically, risk perception weakens the influence of financial literacy on investment decisions. This study also found that different financial literacy levels result in different investment product choices. Better financial literacy tends to make investors allocate more funds to investment instruments than respondent groups with lower financial literacy levels. Further, these results indicate the importance of financial training variables in investment decisions and financial literacy topics. The limitation of this study is that it uses a questionnaire survey design to explain behavioral factors. Experimental studies must be considered to explore behavioral aspects further in future studies. Meanwhile, from practical aspects, this study recommends that investors prepare themselves with sufficient knowledge, expertise, and financial behavior before entering the capital market.

AUTHOR CONTRIBUTIONS

Conceptualization: Wendy Wendy.
 Data curation: Wendy Wendy.
 Formal analysis: Wendy Wendy.
 Investigation: Wendy Wendy.
 Methodology: Wendy Wendy.
 Software: Wendy Wendy.
 Supervision: Wendy Wendy.
 Validation: Wendy Wendy.
 Writing – original draft: Wendy Wendy.
 Writing – review & editing: Wendy Wendy.

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APPENDIX A. QUESTIONNAIRE

Respondent Profile

1. Age (year)

- a. < 21
- b. 21-30
- c. 31-40
- d. 41-50
- e. 51-60

2. Gender

- a. Male
- b. Female

3. Marital status

- a. Single
- b. Married
- c. Divorce

4. Education

- a. Elementary School
- b. Junior High School
- c. Senior High School
- d. Graduate
- e. Postgraduate

5. Income per month (million)

- a. IDR 0-1.99 million
- b. IDR 2-3.99 million
- c. IDR 4-5.99 million
- d. IDR 6-7.99 million
- e. IDR > 8 million

Financial Knowledge

The following is the list of financial products. On a scale of assistance of 1 (Don't understand) until 7 (Understand), please give a check mark based on your understanding of each product

- | | |
|-----------------|--------------------|
| 1. Mutual funds | 7. Cryptocurrency |
| 2. Bond | 8. Assurance |
| 3. Property | 9. Credit card |
| 4. Gold | 10. E-Money |
| 5. Stock | 11. Pension fund |
| 6. Forex | 12. Mobile banking |

Financial Skills

On a scale of 1 (Disagree) to 7 (Strongly agree), please give the rating

- a. I make a monthly budget to manage my finances.
- b. I evaluate the interest costs that must be paid before buying goods on credit.
- c. I monitor the portion of assets, debt, savings and investments that I have.
- d. I make long-term financial plans.
- e. I use professional services to manage my finances.

Financial attitude

On a scale of 1 (Disagree) to 7 (Strongly agree), please give the rating

- a. Saving for old age is very important.
- b. I don't want to take out a loan with high interest costs.
- c. I won't buy things that don't fit into my monthly budget.
- d. I invest for long term goals.
- e. I feel more satisfied when saving than shopping.

Risk Perception

On a scale of 1 (Disagree) to 7 (Strongly agree), please give the rating

- a. A mutual fund scored a return of 15% in its first 3 years. I believe that the product is a good future investment.
- b. In my opinion, predicting the stock market crash in 2008 was very easy.
- c. I believe that investment experience helps in the investment risk assessment process.
- d. I believe that the key to investing in different instruments has the same principles.
- e. I can predict the total return on my investment.
- f. I can make a profit in my investment, even though other people experience losses

Investment decision

Please help, sir/madam, by giving the rating from scale of 1 (Don't understand) until 7 (Understand).

- a. What percentage of your income do you invest in the following products?
 1. Mutual funds
 2. Bond
 3. Property
 4. Gold
 5. Stock
 6. Forex
 7. Cryptocurrency
- b. I invest my money in several types of investment instruments.
- c. I consider investment products from several different companies before making an investment decision.
- d. I sold my investment product which resulted in a loss.
- e. I make long-term financial targets and strive to achieve them.