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The effect of behavioral bias moderated by financial literacy, cognitive ability, and self-efficiency on stock investment decisions in youth generations

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ABSTRACT

Employees in the Padang Sumatra V River Basin Office are under the Ministry of Public Works and Public Housing, where the majority of employees are young people who decide to invest in stocks as a guide and provision for their life which is obtained from capital gains and dividends that can be used for the future if the employment relationship is later abolished. and contracts that cannot be extended due to political affairs. Based on this, this study aims to analyze the effect of behavioral bias, cognitive ability, and self-efficacy on stock investment decisions with financial literacy as a moderator. Data comes from 137 younger generation employees who are collected through online structured questionnaires (Google Forms). Structured equation modeling with a partial least squares approach is adopted for data analysis. The results of the study show that behavioral bias and cognitive ability have a significant effect on stock investment decisions compared to self-efficacy not being a predictor of stock investment decisions and financial literacy does not weaken the relationship between behavioral bias and irrational stock investment decision making.

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INTRODUCTION

The characteristics of the younger generation are close to technology, like to socialize, like to play social media, like to spend money rather than save, prefer non-cash payments, get bored quickly with things that have been bought, like to hang out, and like to travel so that the younger generation is close to behavior consumptive (Anggiani, 2021). Financial distress is a bad impact of consumptive behavior that is inherent in the younger generation so that they are aware of the behavior they already feel, which in the end they change their behavior in managing their finances. There are several activities in managing finances such as saving, observing cash inflows and outflows, not having debt, and investing. Simply put, investment is a guarantee of the future.

Confirmed by Tandelilin (2010) that investment is a commitment to many funds or other resources that are carried out today to obtain future profits. There are many types of investment activities, some invest in real assets such as land, buildings, gold or equipment, and some invest in financial assets such as stocks, bonds, and deposits (Atmaja & Widoatmodjo, 2021). Stock investment is a sales activity as ownership of a company where the purchaser of the shares will accept the risk if one day the company experiences a decline in performance and earns dividends when the company purchased shares ownership of a portion of the profits generated to the shareholders (Firdhausa & Apriani, 2021). Based on this, individuals who carry out stock investment activities are individuals who have excess funds so that they are classified as billionaires whose average age exceeds 50 years and over. So traditionally, individuals who invest in stocks are individuals who have a lot of money or are billionaires who are quite old. However, currently, investing in stocks is not only practiced by parents, but also the younger generation, whose age range is 20-39 years, are also interested in investing their funds in the stock market. This explanation is supported by the Development Director of the Indonesia Stock Exchange (IDX), the increased interest of the younger generation is due to the Come Savings Stock program from the IDX which encourages the younger generation to no longer be afraid of spending large capital when investing in shares on the IDX. Only with 100 thousand money can you trade shares on the IDX. The above description is supported by Statistical Data of the Indonesian Central Securities Depository also known as KSEI. KSEI described the growth of single investor identification or SID which continues to increase every year. Ownership of individual investors dominates, namely 99.5% of all investors in the capital market. The younger generation of investors are those aged 30 and under, showing a percentage of 58.82% in 2020. This number is higher than in previous years and the number will continue to increase in line with the awareness of the importance of investment by the younger generation.

Based on this, it can be concluded that the younger generation has a high interest in investing. The majority of employees who serve in the Padang Sumatra V River Basin Office are young people who have decided to invest in shares, the aim is to get capital gains from the benefits of rising share prices and get dividends as a handle and provision if the abolition of work relationships and contracts that cannot be extended because of the 2024 election. Then budget cuts and DIPA cuts make employees lose some additional income which in the end employee welfare is not fulfilled. To overcome this, employees must have their additional income which can be obtained from investment activities such as stocks.

Investments made can generate large profits if employees as individual investors have financial literacy in making the right investment decisions. Yushita (2017) explains that financial literacy influences how a person owes, saves, invests, and manages his finances. In line Bucher-Koenen & Ziegelmeyer (2011) that investors who have little financial knowledge will acquire bias and make mistakes in their investment decisions and vice versa if investors have financial knowledge they can overcome behavioral biases such as being able to control feelings and emotions in making investment decisions. so that errors can be minimized. The majority and minority of investors are influenced by behavioral biases that greatly affect them in making irrational decisions in investing (Rasool & Ullah, 2020). Behavioral bias will create a tendency to make mistakes in assessing investments (Altaf & Jan, 2023). So investors are influenced by various types of behavioral biases, such as herding behavior and overconfidence which have a significant effect on investment decisions (Parveen ,2021; Altaf & Jan, 2023). For this reason, it is necessary to develop cognitive abilities among investors so that they can develop rational and calculative ways of investing (Kaur & Vohra, 2012). As explained by Behera, (2022) cognitive abilities are needed by investors by providing information through trusted sources, from acquaintances and experts in their field, following scenarios that apply in society, learning from experience and past data and speculation about the future which in the end investors have knowledge in investing and can choose the best investment.

Other empirical studies explain that cognitive ability can lead investors toward rational investment (Özen & Ersoy, 2019). Besides that, Widjaja & Sembel (2020) explained that someone with high self-efficacy tends to make a high investment because he thinks that he can handle every problem that occurs in the investment to achieve his goals and vice versa someone with low self-efficacy tends to avoid investing. because investing contains risks and he thinks that he is not able to handle problems in investing. Thus, self-efficacy has a significant effect on one's decision to invest.

Thus, this research has several contributions to the existing literature on stock investment decisions. This study is a continuation of empirical studies that discuss how Behavioral bias, Cognitive ability, and Self-efficacy influence stock investment decisions in the younger generation. Then explore financial literacy as a moderation between behavioral biases towards stock investment decisions. Therefore, this study provides a solution for young generation investors in investing in shares to minimize the impact of bias in decision making by having financial knowledge and confidence in making investment decisions without being influenced by other factors.

RESEARCH METHOD

Employees with civil servant status and not civil servants in the Padang Sumatra V River Basin Area Office became the population in this study using a non-probability sampling technique with a purposive sampling method. Respondents were selected as the research sample because they met the following criteria: employees in the Padang Sumatra V River Basin Office with civil servants and not civil servants status were classified as belonging to a young age and made stock investments.

A total of 137 questionnaires were distributed to employees in the Padang Sumatra V River Region Office. The questionnaire was distributed online via the WhatsApp platform with four weeks to respond. Results from 117 questionnaires were received (91% response rate) and the responses were further processed for data analysis. The steps taken to maintain a high response rate were to get strong support from the Padang Sumatra V River Basin Office employee, remind weekly to fill out the questionnaire by conducting follow-up chats and follow-up calls with the respondents and confirm to the respondents that their anonymity and being protected the confidentiality of answers to reduce non-response bias (Zahl-Thanem et al., 2021). Thus the response rate in this study was high. Ameen & Praharaj (2020) have reported that a high response rate is characteristic of small-scale survey research and conversely a low response rate is characteristic of large-scale survey research.

Measurement of research variables adopted from previous studies. Behavioral bias adopted by Jain (2020) consists of 11 items, cognitive ability taken Behera (2022) consists of 12 items, Self-efficacy and financial literacy based Noor (2020) consists of 8 items and Stock investment decisions adopted Rasheed (2018) and Adil (2022) which consists of 9 items. All constructs use a first-order reflective measurement model that fits the nature of the construct. The previously validated measurement scale is used to strengthen the research construct. The measurement scale used is a five-point Likert scale starting from strongly disagree (1) and strongly agree (5) (Bougie & Sekaran, 2019).

Partial least squares structural equation modeling (PLS-SEM) is used to test the research hypothesis. Evaluation of measurement models (convergent validity, discriminant validity) and structural models (path coefficients, R^2, f^2, Q^2) describe appropriate PLS-SEM practices (Hair et al., 2019).

RESULTS AND DISCUSSIONS

The younger generation who invest in shares can be seen from their profile as in table 1.

Table 1. Respondent profile

Respondent Profile		n (%)
Gender	Man	91 (78%)
	Woman	26 (22%)
Age	25-29 Year	30 (26%)
	30-34 Year	68 (58%)
	35-39 Year	19 (16%)
Education	Associate degree	15 (13%)
	Bachelor degree	63 (54%)
	Master of degree	39 (33%)
Income/Month	Rp < 2.500.000	15 (13%)
	Rp 2.500.000-5.000.000	63 (54%)
	Rp 5.000.000-7.500.000	39 (33%)
Investment Experience	0-1 Year	4 (3%)
	1-3 Year	81 (69%)
	3-5 Year	32 (27%)
Employee status	Civil servant	33 (28%)
	Non-civil servant	84 (72%)
Marital status	Married	71 (61%)
	Not married yet	46 (39%)
Length of work	≤ 5 Year	14 (12%)
	6-10 Year	84 (72%)
	11-15 Year	19 (16%)
Securities used	Mandiri Securities	77 (66%)
	BCA Securities	15 (13%)
	BNI Securities	25 (21%)

Respondents were dominated by men (78%) who were classified as productive age (58%), namely aged 30 to 34 years with bachelor's degrees (54%) who earned income/month in the range of IDR 2,500,000-5,000,000 (54%) and have investment experience from 1 to 3 years (69%) with status as a non-civil servant in the Padang Sumatra V River Basin Office (72%) and are generally married (61%) who have worked for 6-10 years Year (72%) and in investing in shares, respondents generally partnered with Mandiri Securities (66%).

Measurement Model

Convergent validity measures the correlation between constructs and latent variables (Hair et al., 2019). In assessing convergent validity by testing the reliability of items individually, it can be seen from the standardized loading factor value. Standardized factor loadings describe the correlation between indicators and their constructs (Henseler et al., 2015). The Loading Factor value ≥0.7 is said to be ideal, meaning that the indicator is valid in measuring the constructed construct but the Loading Factor value ≤0.7 must be removed from the model because the indicator is invalid and after that the model is recalculated and the same thing is done to obtain all valid indicator (Hair et al., 2019). The results showed that all indicators had ideal loading factor values except for indicators KIS01, KIS02, KIS04, KIS05, KIS06, KIS09, BP01, BP02, BP07, BP09, BP10, BP11, KK01, KK02, KK03, KK04, KK05, KK06, KK07, KK08, ED6, ED7, ED8, LK01, LK02, LK03, LK04, LK05 and LK06. Next, assess internal consistency reliability. Internal consistency reliability measures the extent to which statement items are measures of latent constructs (Henseler et al., 2015). Internal consistency was assessed from composite reliability (CR) (Hair et al., 2019). If the CR value is above the cut-off value of 0.7 then the construct is considered satisfactory (Hair et al., 2019). The CR results for each construct exceed the cut-off value of 0.7. Reporting the validity and reliability of the measurement model will strengthen the rigor of the research. Another measure of convergent

validity is assessing AVE. The AVE value describes the diversity of indicators. The AVE value is considered satisfactory if the value is 0.5 (Hair et al., 2019). The AVE values for all constructs are classified as satisfactory which can be seen in Table 2 and figure 1.

Table 2. Convergent validity

Construct	Items	Outer Loading	Composite Reliability (CR)	AVE
Stock investment decisions (SID)	SID03	0,852	0,860	0,671
	SID07	0,813		
	SID08	0,791		
Behavioral bias (BB)	BB03	0,843	0,892	0,624
	BB04	0,830		
	BB05	0,831		
	BB06	0,723		
	BB08	0,710		
Cognitive Ability (CA)	CA09	0,748	0,861	0,608
	CA10	0,802		
	CA11	0,797		
	CA12	0,770		
Self-efficacy (SE)	SE01	0,742	0,881	0,597
	SE02	0,701		
	SE03	0,819		
	SE04	0,789		
	SE05	0,806		
Financial Literacy (FL)	FL07	0,934	0,940	0,886
	FL08	0,949		

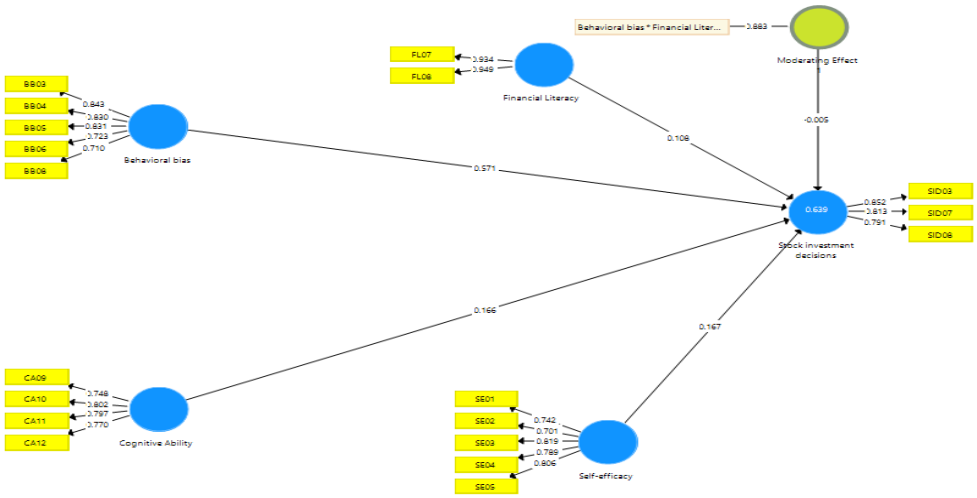

Figure 1. Measurement Model

Lastly measures discriminant validity. Discriminant validity assesses the extent to which a construct differs from other constructs (Hair et al., 2019). Discriminant validity testing uses the heterotrait-monotrait ratio (HTMT). HTMT analysis proved to be superior among other methods in assessing discriminant validity (Henseler et al., 2015). A more conservative cut-off value for HTMT is 0.85 (Hair et al., 2019). The results of this study do not violate the assumptions of discriminant validity as presented in Table 3. Thus, overall the results of the measurement model are adequate.

Table 3. Discriminant validity (HTMT criterion)

Construct	Behavioral bias	Self-efficacy	Cognitive Ability	Stock investment decisions	Financial Literacy
Behavioral bias					
Self-efficacy	0,670				
Cognitive Ability	0,656	0,850			
Stock investment decisions	0,456	0,747	0,749		
Financial Literacy	0,078	0,093	0,074	0,118	

Structural model

Structural models are used to test the causal relationship between constructs seen from the path coefficients table (Hair et al., 2019). The path coefficients table provides information on whether the formulated hypothesis can be accepted or rejected by observing the T Statistics and p values. The hypothesis will only be accepted if the T Statistics is 1.96 and the p-value is 0.05 as reported in Table 4 and Figure 2.

Table 4. Path coefficients

Hypothesis	Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV)	P Values	Decision
H1	Behavioral bias -> Stock investment decisions	0,560	0,556	0,091	6,182	0,000	Accepted
H2	Cognitive Ability -> Stock investment decisions	0,162	0,156	0,080	2,010	0,045	Accepted
H3	Self-efficacy -> Stock investment decisions	0,180	0,197	0,100	1,797	0,073	Rejected
H4	Behavioral bias * Financial Literacy -> Stock investment decisions	0,011	0,004	0,075	0,146	0,884	Rejected

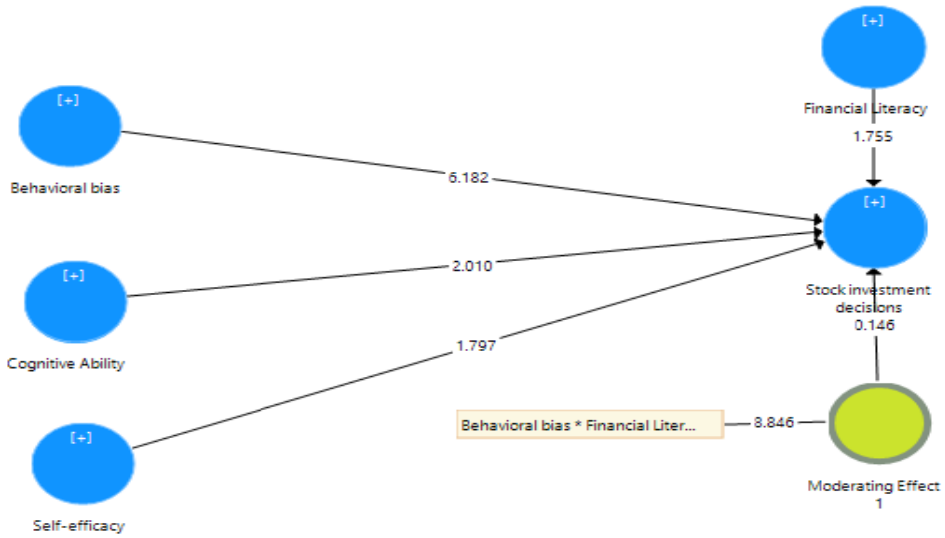

Figure 2. Structural model

Next, it reports the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2) (Hair et al., 2019). R2 is the contribution of influence given by exogenous constructs to endogenous constructs. The R^2 value indicates a behavioral bias, cognitive ability, self-efficacy, and

financial literacy explains stock investment decisions by 64 percent. Changes in the value of R^2 look at whether the effect of the exogenous construct on the endogenous construct has a substantive effect as measured by the effect size (f^2). If the f^2 value is 0.02 it has a weak influence, 0.15 has a moderate influence and a value of 0.35 has a strong influence (Hair et al., 2019). The f^2 value of Behavioral Bias on stock investment decisions is 0.563 which means it has a strong influence so that Behavioral Bias has a strong influence on stock investment decisions compared to cognitive Ability, Self-Efficacy, and Financial Literacy which have a weak influence on stock investment decisions

Predictive relevance (Q^2) aims to check whether indicator data points in the reflective measurement model of endogenous constructs can be predicted accurately (Hair et al., 2019). Good predictive relevance, if the Q^2 value is greater than zero, indicates that the exogenous latent variable is suitable as an explanatory variable capable of predicting the endogenous latent variable. So behavioral bias, cognitive ability, self-efficacy, and financial literacy are suitable as explanatory variables that can predict stock investment decisions. Table 5 provides the values of R^2, f^2, and Q^2.

Table 5. Values of R^2, f^2, and Q^2

Construct	R^2	f^2	Effect size	Q^2
Stock investment decisions	0,640			0.236
Behavioral bias -> Stock investment decisions		0,563	Strong	
Cognitive Ability -> Stock investment decisions		0,038	Weak	
Self-efficacy -> Stock investment decisions		0,037	Weak	
Financial Literacy -> Stock investment decisions		0,031	Weak	

Behavioral bias has a significant influence on stock investment decisions among the younger generation who work in the Sumatra V Padang River Regional Center (H_1). In line with behavioral finance theory, there are anomalies in the market that occasionally occur in investor behavior, known as biased behavior, which has been proven to have an impact on investment decisions (Nofsinger, 2022).). As is the case with the younger generation of employees who work in the Sumatra V Padang River Regional Center, they believe in stock influencers rather than carrying out difficult and lengthy technical and fundamental analyses. In short, the young generation in the Sumatra V Padang River Region Hall has a behavioral bias in investing by following the behavior of stock influencers. Generally, influencers do not have the competence to provide adequate information about shares so young generation investors become mistaken and get lost in choosing shares, in the end these investors experience losses because the value of the shares they buy immediately experiences a sharp decline and is far from their previous calculations. This study is supported by previous studies (Rasool & Ullah, 2020; Altaf & Jan, 2023; Parveen, 2021; Hossain & Siddiqua, 2022) that the tendency for behavioral bias will make mistakes in assessing investments.

Cognitive abilities have a positive and significant effect on stock investment decisions (H_2). The results of this study are in line with (Khan, 2017; Tauni, 2017; Lin, 2011; Özen & Ersoy, 2019; Kaur & Vohra, 2012; Behera, 2022) that the ability possessed by investors can overcome behavioral biases so that investors can make investment decisions based on ability and not based on emotions. Facts on the ground explain that in general respondents graduated with Bachelor's (S1) as described in the respondent's profile above. This can be interpreted that they can think critically and having broader knowledge. Not only that, the majority of respondents have attended training and seminars on capital markets before choosing an investment so that they do not rule out portfolios at inappropriate risks and can make the right decisions when fundamental changes occur. That way when the fundamentals of securities change, investors can investigate and match their portfolios according to the risk and expected profit levels based on reasonable and sharp thinking as a result of their financial knowledge.

Uniquely, self-efficacy does not have a significant effect on stock investment decisions (H_3). This can be interpreted as meaning that self-efficacy is not a benchmark in determining stock

investment decisions because individuals with high or low financial self-efficacy cannot necessarily invest in financial assets. The results of this research are supported by (Widjaja & Sembel, 2020; Mayasari & Sijabat, 2017)that there is no influence of financial self-efficacy on investment decisions, but this is contrary to studies (Qamar, 2016; Rizkiawati & Asandimitra, 2018) that self-efficacy influences someone in investing. Facts found in the field also show that respondents, namely the younger generation in the Sumatra River Region V Padang area, decided to invest in shares for about one to three years so they did not yet have confidence in their ability to decide to buy or sell shares, so they were not yet able to determine profits obtained in the future.

In addition, it is not by existing expectations that financial literacy is not able to weaken the effect of behavioral bias on stock investment decision-making (H_4). Contrary to the results of studies (Bucher-Koenen & Ziegelmeyer, 2011; Adil, 2022) which state that financial literacy can weaken behavioral biases toward investment decision-making, following (Hariono et al., 2023; Ranaweera & Kawshala, 2022; Hildebrandus et al., 2023) that financial literacy does not weaken the influence of behavioral biases on making irrational investment decisions. The younger generation of investors have sufficient financial literacy as indicated by their level of education which is generally undergraduate, but investors of this generation still involve their emotional factors to take part in making investment decisions. Following the statement (Rahman & Gan, 2020) biased behavior is often found in Generation Y because of their relatively young age so they tend to have a high and uncontrollable emotional level which can result in them making decisions quickly without thinking about it critically and sometimes when ignoring the level of education and knowledge he has in making a decision. For various reasons, the financial literacy of young investors who work in the Padang Sumatra V River Basin is unable to weaken the effect of behavioral bias on stock investment decision-making.

CONCLUSION

The results of the study explain that the younger generation of investors who work in the Padang Sumatra V River Basin Office have sufficient cognitive abilities marked by an educational level which is generally a bachelor's degree, but this generation of investors still behaves biasedly by involving emotional factors that exist within them to contribute in making stock investment decisions. Based on these findings, there are several recommendations for individual investors that can be made, such as conducting capital market courses for young generation investors to help them carry out technical analysis before investing. Then, to overcome behavioral biases and their influence on investment by conducting training programs, workshops and seminars that can improve investors' financial literacy and cognitive abilities as well as increase the ability to understand and defend against biases that lead to irrational investment choices and such knowledge must be offered to potential investors and existing individual investors who thus become confident in their chosen investment decisions and avoid large financial losses in the future.

This research is not free from limitations and suggestions for further research. The number of respondents was relatively small, so it was considered that they did not describe the profile and characteristics of the younger generation of investors. It is hoped that future research will increase the number of respondents in the Sumatra V Padang River Regional Hall Environment so that it better represents the profile and characteristics of investors in that environment. Then there are still many independent variables which are thought to influence investment decision making by investors such as locus of control, financial behavior, Emotional intelligence, Risk Attitude, Market overreaction, Demographic variables, Risk tolerance, and Individual Mood. Lastly, this research is a cross-sectional study, therefore it is recommended that future research conduct longitudinal research.

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