

THE ROLE OF THE HEURISTICS EFFECT ON STUDENT INVESTMENT DECISION-MAKING

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ABSTRAK

Penelitian ini dilakukan untuk menyelidiki dampak bias heuristik, perasaan terlalu percaya diri, ketersediaan, representatif, dan penambatan (anchoring) pada proses pengambilan keputusan investasi mahasiswa. Berbagai dugaan yang diajukan didalam penelitian ini, diuji melalui analisis jalur dari data responden yang dikumpulkan yang berasal dari mahasiswa aktif melalui survei dengan kuesioner terstruktur, yang didistribusikan secara daring. Data yang terkumpul dianalisis menggunakan pemodelan persamaan struktural untuk menilai model pengukuran dan model struktural. Hasil analisis data menyoroti peran penting toleransi risiko dan literasi keuangan dalam menentukan pilihan investasi mahasiswa, ketika dipengaruhi oleh bias heuristik. Hal ini menunjukkan bahwa adanya edukasi mengenai risiko dan toleransinya, dan literasi keuangan dapat meningkatkan kapasitas mahasiswa dalam mengambil keputusan investasi. Hasil penelitian ini menunjukkan bahwa perilaku keuangan berperan penting dalam memahami bagaimana bias heuristik mempengaruhi pengambilan keputusan investasi mahasiswa. Dimasa mendatang sebaiknya dilakukan penelitian yang menerapkan berbagai metode pengumpulan data, termasuk survei dan wawancara.

Kata kunci: Keuangan perilaku, literasi keuangan, bias heuristik, pengambilan keputusan investasi, risiko

ABSTRACT

This study aims to examine the students' decision on investment and the relationship between this dependent and independent variables, financial literacy, risk tolerance and heuristic biases. Related to this objective, the study applies statistics using path analysis to respondents' data that were collected from active university students through a survey with structured questionnaires, which were distributed online. Collected data have been assessed to evaluate the validity and reliability of the research measurement and then followed by the assessment of the relationship between variables. The results highlight the critical role that the degree of tolerance on risk and literacy on finance is vital in determining students' investing choices, when they are influenced by heuristics biases. This indicates that risk tolerance and financial literacy-focused educational initiatives may improve students' capacity for making decisions. The study emphasizes critical role of behavioral finance in understanding how heuristic biases affect student investment decision-making. Future research should apply various methods of data collection, which include surveys and interviews.

Keywords: Behavioral finance, financial literacy, heuristic biases, investment decision-making, risk.

INTRODUCTION

With the increase trend in investment, our knowledge and understanding of behavior-based finance and neural finance is becoming essential areas of study, fundamentally changing the way we understand financial decision-making. In the traditional finance models, most individuals assume they act rationally when making decisions and based strictly on the available information and maximizing utility (Singhraul & Batwe, 2022). However, real-world observations frequently

deviate from these rational models, revealing the underlying complexities of human behavior in financial contexts. This Behavior in finance seeks to explain these deviations by integrating psychological principles that highlight how people's judgement to invest is affected by preferences or biases in mental process or cognitive and factors related to emotion (Ogunlusi & Obademi, 2019).

Some experts in behavior-based finance explained that human biases in cognitive relate to their investment decision, and this shows that there are complex processes in human mind when they meet financial challenges (Yurtadur & Ozcelik, 2019). Based on research on the level of personal finance knowledge in the European Union called the Eurobarometer, in 2023, only 25% of respondents in the EU had low knowledge scores, with 18% having low financial literacy (Meineke, 2024). This shows how an improvement must be made to raise financial literacy in the EU as it affects people's self-assurance and financial decision-making abilities to make wise investment choices to counter the uncertainty in the modern financial market. Furthermore, the same researcher explained that these biases through engaging interactive methodologies, including games, to explore these biases, demonstrating that impulsive and irrational financial choices frequently lead to suboptimal outcomes.

Studies in behavioral finance have shown that emotional responses, such as fear or pleasure, significantly influence risk-taking behavior and investment choices, often leading to irrational outcomes (Ogunlusi & Obademi, 2019). Examples include anchoring, where individuals rely excessively on initial information, and representativeness, which leads them to identify patterns that may not exist. These mental shortcuts significantly influence how students, particularly in volatile stock market conditions, approach their investment decisions (Asbaruna, 2023).

Financial literacy remains a critical challenge, as many individuals lack the skills required to make sound investment decisions. The 2023 Eurobarometer survey indicated that only 25% of respondents demonstrated strong financial knowledge, underscoring the need for improved education in this area (Meineke, 2024). For students, higher financial literacy can reduce biases and improve decision-making capabilities in the face of market uncertainties (Meineke, 2024). In developing an effective plan, it should be based on each person's unique risk tolerance and preferences since the main objectives of financial investments are wealth accumulation, a steady passive income stream, and achieving a specific financial milestone. Students, as beginner investors, often face difficulty in balancing goals such as wealth building, creating a steady income stream, and achieving milestones. Understanding personal risk tolerance and aligning it with strategic investments can reduce bias effects and support more rational financial decision-making. Conducting in-depth financial research and identifying the anomalies as well as outliers in the stock market could be the first step to building an investment portfolio. However, with the ever-changing characteristic of shares (volatile), decision-making could not only be accounted for by contemporary investment theories but also needed sufficient judgment to create a buying or selling scheme as a particular behavioral tendency that is common in the marketplace (Maryami-Yaghoubian et al., 2024). Human brains play a major influence in how investors approach risk and make financial decisions, especially in light of the abundance of information available on social media and in the mass media in a cognitive approach heuristic. This overwhelming volume of data can confuse investors and lead to biases like availability and anchoring bias. For students who frequently interact with these platforms, the challenge lies in distinguishing reliable sources from trends that are insufficient of thorough analysis (Maryami-Yaghoubian et al., 2024).

Building on the previous paragraphs, the aims of this study is to explore the biases in heuristics or cognitive such as overconfidence, availability, representativeness, and anchoring in affecting investment decision-making processes of students, which can result in inefficient markets. By focusing on this demographic, the research highlights an underserved population in behavioral finance studies, emphasizing the need to understand how cognitive and emotional factors shape their financial behaviors. To be more specific this study explores the influence of heuristic investment behavior in young adults and aims to provide actionable insights to enhance financial education and decision-making strategies.

LITERATURE REVIEW

Heuristic Biases

The term is used to illustrate the process of thinking to facilitate decision-making in which it is bypassing complex information (Tversky and Kahneman, 1974). The author initially identifies three main types, first is anchoring, second is availability, and the third is representativeness. The fourth type of heuristic is known as overconfidence bias (Waweru et al., 2008). The following paragraphs explain each type of heuristics, overconfidence, availability, representativeness and anchoring bias.

Overconfidence arises when individuals have an inflated belief in their own knowledge and judgment abilities without sufficient external validation (Barber & Odeon, 2001). This bias manifests in the tendency to overrate the likelihood of being correct in one's assessments. It often results in individuals being hesitant to revise their initial evaluations, thereby reinforcing a cycle of overconfidence. Previous research indicated that this bias is influenced by both personal characteristics - such as age - and external factors like market context (Barber & Odeon, 2001; Gervais et al., 2011). Investors who are overconfidence tend to make extreme decisions in their investment, as they think they can get more returns from their investments easily. Thereby their decisions will damage their long-term investment outcomes (Barber & Odeon, 2001).

A previous study depicts that when investors are too confidence with their estimation will result in major financial setbacks. This illustrates the crucial need for investors to cultivate humility and seek corroborating insights when making investment decisions (Gervais et al., 2011).

Availability bias occurs when individuals assess the likelihood of an event based on how easily examples come to mind (Tversky and Kahneman, 1974). This significantly skews investment decisions, as investors may overemphasize recent or memorable events while neglecting past occurrences that are less salient. Such biases lead to disproportionate reactions to market news, resulting in heightened volatility and the potential for mispricing. Research demonstrates that investors relying on available information often make poor decisions, which can adversely affect their portfolio performance (Cao et al., 2021).

Representativeness bias significantly affects investors during the acquisition of new stocks. In the study of Mokoaleli-Mokoteli and colleagues (2009), they found that financial analysts often take into account behavioral biases and potential conflicts of interest when they provide recommendations for new stock investments. This tendency influence the investors to take investment decisions which are inline their predictions or the prevailing market sentiment rather than with an objective analysis of the underlying fundamentals (Barberis & Shleifer, 2001). Research has demonstrated that this bias may also contribute to chronic mispricing in markets, as investors may overlook essential data in favor of more familiar or recent examples (Gervais & Odeon, 2001).

Anchoring bias can lead investors to frame their evaluations based on prior values or initial calculations, ultimately impacting their final investment choices. Various studies have illustrated how anchoring can skew an investor's perception of stock values and future market trends (Cao et al., 2021). Moreover, when investors anchor their decisions to arbitrary numbers or past market performance, they often struggle to modify their expectations, especially when there is new market information, leading to poorer outcomes (Colosio et al., 2017).

Although heuristics can enhance decision-making efficiency and accuracy under certain conditions (Gigerenzer & Gaissmaier, 2011), they also can lead to biased outcomes, particularly in the uncertain realism of investments (Ahmad & Shah, 2022). Research has consistently shown that reliance on heuristics often leads to poor investment decisions, riskier choices, and diminished portfolio outcomes, impacting both entrepreneurs and capital markets (Cao et al., 2021). This previous research shows the result that people often resort to simpler decision-making strategies rather than seeking optimal solutions (Pompian, 2011). The study examines how various heuristics biases influence investment decisions, specifically in relation to risk tolerance, financial literacy, and investor experience. Findings indicate that these interconnected factors aim to explain how investors navigate the complications of financial decision-making and the cognitive shortcuts they often employ. Conversely, a study by Sudirman and his colleagues (2023) reveals that those with

lower risk tolerance tend to be more cautious and objective, allowing them to better manage their investment decision making process.

Risk Tolerance and The Decision to Invest

In research about good financial knowledge and risk tolerance and their relationship with decision to invest, someone with a high degree of knowledge can reduce the expenses associated with gathering and analyzing data as well as the barriers to investing in the stock market (Awais et al., 2016). Young people for example, not only were less educated, but they also knew very little about fundamental concepts in economics like interest rate compounding, portfolio diversification, and other strategies to ace the investment return. Therefore, it will be difficult for individuals who are responsible to oversee and control the risk to determine if the relevant data to reduce the risk is effectively capable of anticipating, without understanding how financial report readers evaluate risk. The same authors called the degree of risk tolerance as a psychological factor when people make decisions in uncertain financial conditions, as it involves the ability of individuals in assessing the chances and probabilities of various potential events to happen. Risk tolerance can influence the kind and quantity of investments a person makes with a greater risk typically linked with investing in stocks or exchange-traded funds (ETFs), while opting bonds is tied to a lower degree of risk. Based on Twin studies in 2022, almost all investments contain risk, hence people need to know their tolerance to take the risk. With this information, they will be able to plan their portfolio and choose their investment strategies.

Financial Literacy and The Decision to Invest

When we discuss economic investment, individuals often commit substantial capital intending to generate profits, which complicates the investment landscape. While most investors aim to optimize their utility and possess rational expectations, research conducted by behavioral economists suggests that decision-making could be more logical, leading to market inefficiencies, especially in the short term (Asbaruna, 2023). Encompassing knowledge, skills, confidence, and motivation, including financial management behaviors, are unified in financial literacy (Remund, 2010). It was found that the relationship between knowledge in finance and behavioral biases is negative, suggesting that a deeper understanding of financial concepts leads to a reduction in such biases. This relationship underscores the significance of individual experience in decision-making, while perceived prospects and growth opportunities of investment issuers can enhance investors' confidence in selecting these instruments. Financial literacy involves understanding finance and investment, as well as the ability to implement personal strategy in finance (Remund, 2010; Asad et al., 2018). Someone's knowledge on finance and his understanding toward a certain investment instrument are related to his belief in the type of investment and orientation to take risk (Parveen et al., 2020). Moreover, financial literacy is negatively correlated with behavioral biases; thus, a greater understanding of financial concepts typically leads to a reduction in such biases (Rasool & Ullah, 2020; Ahmad & Shah, 2022). Furthermore, as financial literacy within a community increases, so does their capacity to take a decision on finance and investment. Therefore, their ability to take financial and investment decision is improved (Wilantari, 2021).

Hypothesis Development

Heuristic biases include dimensions such as overconfidence, availability, representativeness, and anchoring, may impair investors' ability to accurately assess risks (Barber & Odeon, 2001; Cao et al., 2021; Gervais & Odeon, 2001). Consequently, students influenced by these biases will have higher degree of taking the risk, as their decisions are influenced by personal opinions rather than objective evaluations of risk.

H1: Heuristic Biases influence Risk Tolerance

When heuristic biases dominate, individuals may overlook or undervalue the importance of acquiring and applying comprehensive financial knowledge (Barber & Odeon, 2001; Cao et al., 2021; Gervais & Odeon, 2001), this creates some questions to understand basic financial concepts,

and fail to explain that financial literacy guides their decision-making.

H2: Heuristic biases influence financial literacy

Individuals who are more willing to take risks or who have higher levels of risk tolerance may not be as influenced by heuristic biases, as they are more willing to explore diverse investment opportunities and adapt to changing conditions (Gervais et al., 2011). Conversely, low-risk-tolerant investors might reveal more cautious behavior, which can counteract the negative effects of biases. Their ability to handle financial uncertainty enables them to explore diverse investment options and adopt strategies aligned with their long-term financial goals.

H3: Risk Tolerance influences investment decision-making

Financial literacy reduces reliance on cognitive biases, such as overoptimism or availability prejudice, and enhances ability to assess risks and returns more accurately (Remund, 2010; Asad et al., 2018). Investors who are more financially literate tend to be more precise and make the most of their investments.

H4: Financial literacy influences investment decision-making



Figure 1. Research Framework

Figure 1 depicts the association of all research variables and hypotheses proposed in this study.

RESEARCH METHOD

This study applies statistical techniques such as descriptive and path analysis to examine the relationship between research variables. Heuristic biases is the independent variable, while investment decision is the dependent variable, and risk tolerance and financial literacy are the mediators. The study employed a structured online questionnaire that took an average of five minutes to complete. Participants in the study were chosen through a purposive sampling because the study's primary requirement was an investing account for university students. There are also screening questions in terms of investment experience to ensure the respondents have the data validity, such as 1) the length of investing, 2) the purpose of investing, 3) have made stock transactions more than three times, 4) have got stock dividends, and 5) buy stocks from different industries. Furthermore, to measure each variable, researchers adapted the existing measurements from related studies (Table 1). There are a total number of 20 items of questions composed as the basis of the data collection process while using choices of answers from strongly disagree to strongly agree to capture a spectrum of opinions while avoiding overly granular distinctions that might confuse participants. The questionnaire was administered to college students with an active investing account and was gathered via university-specific marketing, social media, and personal networks. Although this strategy guarantees access to students who fit the research requirements, its dependence on easily available networks raises the possibility of selection bias. Then, efforts were made to increase representativeness by including students from multiple universities and respondents' anonymity was strictly ensured. The data collection was carried out in approximately three weeks in November 2024. Moreover, researchers gave two lucky respondents a digital

currency balance of 100,000 rupiah to boost the low level of engagement and incentive of respondents to complete the survey. Researchers collected 96 total responses from university students who have been actively involved in investment activities with 55.2% of those who have experienced investing activities for 1-2 years.

Table 1. Research Measurement

Variable	Item	Indicator
Financial Literacy (Parveen et al., 2020; Ghosh, 2023)	FL1	I have knowledge to assess past performance of a stock
	FL2	I analyze sufficient information regarding investment alternatives
	FL3	I have capabilities to analyze financial statements and annual reports
	FL4	I understand the difference between various types of financial assets, such as stocks, bonds, and mutual funds.
	FL5	I can use various tools to forecast earnings
Overconfidence Bias (Sudirman et al., 2023; Abdin et al. 2017; Nada & Moa'mer, 2013)	OB1	I am an experienced investor
	OB2	I can predict future stock price movements in various analyses.
	OB3	I am a smart investor in the stock market
	OB4	I believe my ability to choose stocks is better than others
	OB5	I have better investment performance compared to other people.
Availability Bias (Sudirman et al., 2023; Abdin, et al., 2017; Nada & Moa'mer, 2013)	AB1	I feel more confident in my investment choices than my colleagues or friends
	AB2	I use my ability to predict the right investment time so that the performance of my stock portfolio can outperform the market performance
	AB3	I own several shares of different companies on the Indonesia Stock Exchanges (IDX)
	AB4	I believe my knowledge can help me outperform the market
	RB1	I buy 'hot' stocks and avoid stocks that have performed poorly in the recent past
Representative Bias (Man et al., 2021; Cao et al., 2021)	RB2	I use trend analysis of some representative stocks to make investment decisions for all stocks that you invest in
	RB3	I assume that a stock's management style reflected in past performance will continue in the future
	RB4	I am influenced by recent news when deciding whether stock will perform similarly to past events
	RB5	I believe that a stock's past performance is a strong indicator of its future performance, even if the market conditions have changed
	ACB1	I rely on my previous experiences in the market for my next investment
Anchoring Bias (Man et al., 2021; Cao et al., 2021)	ACB2	I forecast the changes in stock prices in the future based on the recent stock prices
	ACB3	I anchor (put) my investment decisions based on the price at which originally bought the stock, even if the market has changed
	ACB4	When analyzing a new investment, I consider previous estimates of its value as a major reference point
	ACB5	I take cues from well-known price points when deciding when to buy or sell, even if the fundamental factors have changed
	IDM1	I trust my feelings when making investments. Usually, I make investments that feel right to me.
Investor's Decision-Making (Sudirman et al., 2023; Rasheed et al., 2018; Scott & Bruce, 1995)	IDM2	I rely on my instincts when investing. Feeling the rightness of an investment holds greater importance to me than having a logical justification for it.
	IDM3	I tend to rely on my intuition when I make investments.
	IDM4	I know the macroeconomic information at local and abroad
	IDM5	I understand the report on the profit and performance of listed companies
	IDM6	I have knowledge in history of stock price trends
Risk Tolerance (Sudirman et al., 2023; Khan et al., 2017; Pinjisakikool, 2018)	RT1	I think it is better to have a safe investment with a low but guaranteed return than to take risks to have a chance of a high return.
	RT2	When faced with market volatility, I am more likely to stay invested rather than cash out.
	RT3	I do not invest in stocks because it is too risky. I want to make sure that my investment is safe.
	RT4	I am comfortable with the possibility of losing some or all of my

		investment in exchange for potentially higher returns
	RT5	I am ready to borrow money to make a profitable investment
	RT6	Even if it means taking on more risk, I would prefer to invest my money in opportunities that have a chance for significant growth over the long term
	RT7	I prefer investments that can fluctuate in value rather than those that are stable but offer lower returns
	RT8	I would consider investing in assets that are considered high-risk, such as cryptocurrencies or startups if I believe in their potential

RESULTS AND DISCUSSION

Table 2 indicates that respondents were mostly university students and started to invest when they were 21 years old or above (51%). Moreover, based on gender, the male students fill the majority of the survey with 60.4%, compared to the female students with only 39.6%. Many of them have invested for 1-2 years and have the purpose of long-term investment. Figure 2 illustrates the results of path analysis.

Table 2. Respondents' Profile

Demographic Variable	Items	Frequency	%
Age	Under 18	1	1
	18-20	46	47
	> 20	49	51
Gender	Male	58	60.4
	Female	38	39.6
Undergraduate Education	Freshmen (1st year)	12	12.5
	Sophomore (2nd year)	25	26
	Junior (3rd year)	33	34.4
	Senior (4th year)	26	27.1
	Less than 1 year	34	35.4
Investment Length	1-2 years	53	55.2
	3-4 years	9	9.4
	Short-term	29	30.2
Investment Purpose	Long-term	49	51
	Both	18	18.8

Data analysis was done using Structural Equation Modeling. Smart-PLS was utilized to facilitate path analysis and generate the results (Figure 2). The findings of evaluating the measurement model are outlined in Table 3. To evaluate reliability in this study, Cronbach's alpha, rho-A, and Composite Reliability are employed to demonstrate how consistent each item is with the corresponding variables (Taber, 2018; Hair et al., 2019). Reliability of the research instruments is shown by its consistency, and it is established with a value greater than 0.7 (Rasoolimanesh & Ali, 2018). However, Taber (2018) implies that 0.6 is considered reasonable or acceptable. Some items of different constructs, such as OB2, OB3, OB5, AB2, AB4, AB5, RB1, RB2, ACB1, ACB2, ACB5, RT4, RT6, and RT7 were deleted due to problems of reliability and validity. Table 3 presents reliability of all items above the threshold, outer loadings >0.5, reliability >0.7 and AVE >0.5 (Hair et al., 2019). Furthermore, all question items have VIF<5 and this demonstrate that all question items are free from multicollinearity (Hair et al., 2019).

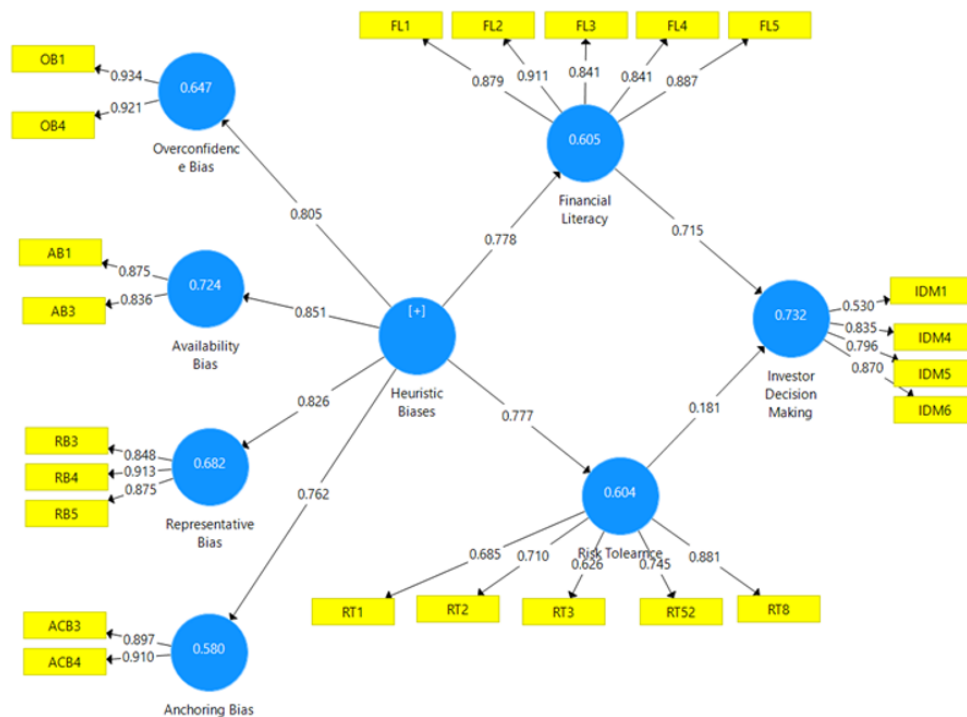


Figure 2. Path Analysis

Table 3. Validity and Reliability

Variables	Item	Outer Loadings	Cronbach's Alpha	rho_A	Composite Reliability	AVE	VIF
Heuristic Bias			0.886	0.890	0.907	0.521	
• Overconfidence	OB1	0.934	0.838	0.643	0.925	0.860	2.080
	OB4	0.921					2.593
• Availability	AB1	0.875	0.636	0.929	0.846	0.733	1.278
	AB3	0.836					2.184
• Representative	RB3	0.848	0.853	0.890	0.911	0.761	1.665
	RB4	0.913					2.330
	RB5	0.875					
• Anchoring	ACB3	0.897	0.774	0.856	0.889	0.816	1.665
	ACB4	0.910					2.330
Financial Literacy			0.922	0.842	0.941	0.761	
	FL1	0.879	0.922	0.842	0.941	0.761	3.172
	FL2	0.911					4.141
	FL3	0.841					2.343
	FL4	0.841					3.080
	FL5	0.887					3.422
Risk Tolerance			0.793	0.831	0.852	0.539	
	RT1	0.685	0.793	0.831	0.852	0.539	2.080
	RT2	0.710					2.593
	RT3	0.626					1.766
	RT5	0.745					2.719
	RT8	0.881					2.410
Investor's Decision-Making			0.768	0.858	0.849	0.592	
	IDM1	0.530	0.768	0.858	0.849	0.592	1.201
	IDM4	0.835					1.980
	IDM5	0.796					1.762
	IDM6	0.870					1.713

Table 4 presents the R square ranges from 0.5 to 0.7 as the highest amount with all of the independent variables which is the type of heuristics biases having an average of 0.6 (Ozili, 2023; Hair et al., 2019). The other variables that are tolerance to risk tolerance, literacy in finance, and investor's decision-making are also greater than 0.6. This means that the independent variables

explain a substantial amount of the dependent variable variance with a percentage greater than 60% each.

Table 4. Hypotheses Testing Results

Hypothesis	Original Sample (O)	R Square	Standard Deviation	t-Statistics	p-value	Remark
H1: Heuristic Biases → Risk Tolerance	0.777	0.604	0.035	22.217	0.000	Supported
H2: Heuristic Biases → Financial Literacy	0.778	0.605	0.051	15.121	0.000	Supported
H3: Risk Tolerance → Investor's DM	0.181	0.732	0.081	2.216	0.029	Supported
H4: Financial Literacy → Investor's DM	0.715	0.732	0.067	10.652	0.000	Supported
Indirect Effect						
Heuristics Bias → Risk Tolerance → Investor's DM	0.146	0.732	.067	2.106	0.038	Supported
Heuristics Bias → Financial Literacy → Investor's DM	0.556	0.732	0.073	7.594	0.000	Supported

The indirect effect concludes the overall relationships between heuristic biases, risk tolerance, financial literacy, and investor's decision-making. Both mediators, the tolerance level of risk and level of knowledge in finance, are significantly mediate the relationship between heuristic biases and investor's decision making. Heuristic biases demonstrate critical indirect impact on investors' decision-making through risk tolerance $\beta=0.140$ and financial literacy $\beta=0.556$, as evidenced by a path coefficient of (Table 4). This result confirms that financial literacy functions as a very significant mediator because (p-value = 0.000) and the effect magnitude path coefficient ($\beta=0.556$) is higher than that of risk tolerance ($\beta=0.146$). These results imply that enhancing financial literacy rather than just risk tolerance will create greater impact on investment decisions.

This researchers' findings that heuristic biases indirectly influence students' investment decision-making are consistent with earlier studies (Ahmad & Shah, 2022; Cao et al., 2021) which revealed that relying too much on heuristics frequently results in riskier choices, poorer investment decisions, and reduced portfolio outcomes, which affect capital markets and entrepreneurs alike. Pompian (2011) also added that people often resort to simpler decision-making strategies rather than seeking optimal solutions by examining the market circumstances or adjusting their decision based on their perceived risk. The results of H1 and H2 clearly depict how heuristic biases influence on risk tolerance and financial literacy with people tend to not pay attention to the much-needed analysis before deciding to invest. The results of this research also find a connection with study by Remund (2010) as it demonstrates significant relationship between financial literacy and behavioral biases. Therefore, to prevent or tackle it, as Awais et al. (2016) and Rasool and Ullah (2019) noted, a person with a high degree of knowledge can reduce the expenses associated with gathering and analyzing data as well as the barriers to investing within the stock exchange. With the improvement of financial literacy, students can make knowledgeable financial choices, and investment decisions. This means that this improvement lead their decision-making skills in finance and investments. It is clear that H3 and H4 align with prior research, which explains that individuals need to assess their risk tolerance independently before making their decision to invest. However, this study found a weaker indirect relationship effect between heuristic biases on investor decision-making through mediating effect of risk tolerance compared to prior research, which could be attributed to differences in sample demographics or the scope of the variables analyzed. Additionally, compared to risk tolerance, the degree of literacy in has a greater direct effect on investor decision-making, highlighting the need to increase financial literacy to enhance investment results. These results contribute to existing research through emphasizing on how risk tolerance and financial knowledge influence heuristic-based investment choices.

CONCLUSION

This research highlights the importance of behavioral finance in studying how heuristic biases influence students' investment choices. Behavioral finance becomes critical area of study as it looks at people behavior in their investment decisions especially in the association between the mental process, risk tolerance, financial literacy and the investment decision. The results suggest that students' risk tolerance and financial knowledge are important factors which affect their investment decisions. This emphasizes the important role of educational efforts to enhance financial literacy and facilitate students make better investment choices. .

The study on behavioral finance and heuristic biases carries notable real-life implications, especially for students and young investors. One significant result shows biases like overconfidence and representativeness influence decision-making processes. Research has shown that overconfidence can lead investors to carelessly decide their investment because of miscalculating risks and overrating their knowledge and abilities, which often results in poor investment choices. By understanding these biases, students can become more aware of how they take their financial and investment decisions and plan to counteract the impacts. They could collect data or discuss with external advisors before investing. Furthermore, enhancing financial literacy is crucial as individuals who have more knowledge in finance are better in their financial planning and investment. With more knowledge in finance, this will empowers students to set realistic personal investment goals and understand their risk tolerance, which is crucial for making informed decisions. It also stimulates a sense of accountability for their financial choices, encouraging them to adopt a more disciplined approach to investing. Enhancing students' financial literacy will facilitate them to manage the challenge in financial market, which encourage them to improve their investment decision making that are both responsible and successful in the long run.

Research Limitation and Suggestions for Future Research

The limitation of this study was the size of the research sample or smaller number of the survey respondents. Research with small sample size can affect the generalizability of the findings as it may not accurately represent the broader population of students or young investors. Research indicates that smaller sample sizes can lead to skewed results and reduced statistical power, making it difficult to draw definitive conclusions. This limitation highlights the need for caution when interpreting the result and applying them to wider contexts. Hence study which includes bigger sample size is needed in the future. The research was also conducted within a limited time frame - less than a month (20 days) - which may have restricted the depth of data collection and analysis. Time constraints can lead to a superficial exploration of complex issues, potentially overlooking important factors that influence investment decisions. Research duration, which is enough, is important as adequate time for data collection and analysis will provide more comprehensive insights. Without sufficient time, the full range of influences on student investment behavior, thereby limiting the study's overall impact on data analysis. Longer time duration allows researcher to conduct mixed research method to gain more valuable insights. Therefore, a more time duration of research is strongly suggested for research in the future.

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