Jurnal Organisasi dan Manajemen
Journal Homepage : http://jurnal.ut.ac.id/index.php/JOM

Deciphering Investment Decision in Fintech: The Role of Behavioral Bias and Risk Perception

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Article Info

Keywords:
Investment decision;
Financial technology;
Behavioral bias;
Risk perception

JEL Classification:
D81, E22, G41

DOI:
10.33830/jom.v20i2.8248.2024

Article History
Received : May 25, 2024
Accepted : November 8, 2024
Publish : December 28, 2024

Abstract

Purpose – This study aimed to investigate the effect of behavioral biases on Indonesian investors using fintech platforms. The roles of blue-chip stock, availability, herding, and overconfidence bias, as well as disposition effect on investment decisions, were examined both directly and indirectly through risk perception.

Methodology – Data were collected via stributing online surveys to over 360 investors between November 2023 and January 2024. Structural Equation Model analysis method was used to evaluate the data.

Results – Availability and blue-chip stock biases positively influence investment decisions and risk perception, while herding bias is insignificant. Overconfidence bias and disposition effect significantly affect risk perception but not investment decisions. Risk perception mediates the significant effects of availability and blue-chip stock biases on investment decisions.

Originality – The study explores the unique role of fintech platforms in shaping investment decisions, extending beyond traditional analyses of investor psychology. Prospect theory was applied as a theoretical lens to examine the effect of specific behavioral biases on investment decisions and risk perception within the Indonesian fintech context.

1. Introduction

Financial technology (Fintech) is undeniably reshaping the investment landscape on a global scale. Fintech has democratized access to investment opportunities by leveraging technology, previously exclusive to high-net-worth individuals and institutional investors. According to World Bank (2023), "Fintech and the Future of Finance", fintech innovations, such as robo-advisory, crowdfunding, and peer-to-peer lending have reduced the entry barriers to investment, promoting financial inclusion and market efficiency. Fintech-driven advancements in data analytics and artificial intelligence have significantly enhanced investment decision-making. According to a McKinsey Global Institute (2023) report, these technologies have empowered investors with sophisticated tools for portfolio management, risk assessment, and fraud detection.

Indonesia has experienced a meteoric rise of fintech, transforming the financial landscape. The number of internet and smartphone users has increased significantly, propelling fintech adoption. APJII (2024) reported that internet penetration increased to 78.19% in 2023, marking a

consistent upward trend since 2018. This digital infrastructure facilitated the growth of fintech platforms, providing convenient and accessible financial services. Consequently, fintech has democratized investment, empowering a broader segment of the population to participate in the financial markets. The number of retail investors has also increased, with the KSEI (2022) reporting a surge from 7.48 million accounts in 2021 to 10.3 million in 2022, accounting for a 37.5% increase. This burgeoning investor base is increasingly relying on fintech platforms for investment decisions.

The rapid proliferation of fintech has democratized access to investment, creating a complex landscape for individuals. Traditionally, economic theory assumed that rational investor behavior focused on maximizing returns. This perspective has challenged the statement of behavioral economics that psychological factors significantly influence financial decisions. Kahneman & Tversky (1979) developed prospect theory, a cornerstone of behavioral economics and the grand theory underpinning this study. The theory shows that individuals make decisions based on potential gains or losses rather than objective probabilities. This departure from rational decision-making has led to the identification of various cognitive biases, which systematically distort judgment and affect investment outcomes. These biases were shaped by a combination of biological, cultural, and environmental factors, thereby significantly affecting investment outcomes (Thaler, 2015). In this context, it is crucial for investors to have a solid understanding of stocks and stock price movements (Mubarok, 2022) and to analyze company performance before making investment decisions to avoid potential losses (Santoso et al., 2020). Understanding these behavioral biases, grounded in prospect theory, is crucial for making informed decisions, as investors navigate the fintech ecosystem. Furthermore, the user-friendliness interface of fintech can inadvertently reduce risk perception, leading to an underestimation of potential losses.

Two key novelties were introduced, first, the study explores the unique role of fintech platforms in shaping investment decisions, extending beyond traditional analyses of investor psychology. Second, prospect theory was applied as a theoretical lens to examine the effect of specific behavioral biases on investment decisions and risk perception within the Indonesian fintech context.

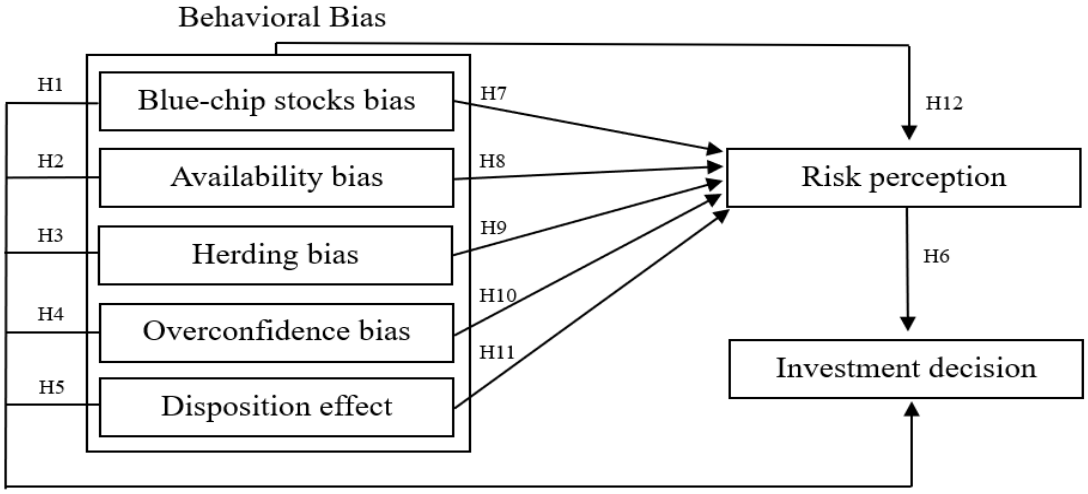

Figure 1. Conceptual Framework

Blue-chip stocks are shares of companies with a good reputation, familiarity, high profitability ratios, and credibility. These stocks are a popular investment term referring to established companies with a historically stable performance record. However, in investment

behavior, investors tend to be biased towards blue-chip stocks, leading the investment decisions to be based on such perceptions (Almansour et al., 2023). The blue-chip stock bias strengthens the desire of investors to invest without fearing losses. Ahmed et al. (2022) examined the effect of blue-chip stock bias on investment decisions and found significant positive results. The results were due to two reasons, first, the majority of investors in Pakistan are less concerned about the losses that will be obtained from the investments. Second, Pakistan is also known as a country that has a collective culture, leading to reluctance to take risks. According to Almansour et al. (2023)**,** there was a positive significant relationship related to the relationship between blue-chip stocks bias and investment decisions.

H_1: Blue-chip stock bias positively influences investment decisions

Availability bias is the tendency of investors to rely on information that is easily available rather than examining available alternatives (Muhammad et al., 2023). These unforgettable events are expected to be exaggerated and elicit an emotional response (Jain et al., 2023). According to Jain et al. (2023) and Hesniati (2020), availability bias had a significant positive effect on investment decisions. This is because availability bias leads investors to rely heavily on readily available or recent information, often ignoring more comprehensive or relevant alternatives. This reliance affects stock selection, as investors tend to make decisions based on familiar or easily accessible data. Consequently, the preferences and decisions shift based on the information at hand, which can include irrelevant or misleading details. According to Novwedayaningayu dan Saputri (2020), there was a positive significant relationship between the two variables. Kurniana et al. (2023) and Manalu et al. (2023) also found a positive significant relationship. However, Loris (2020) and Willyanto et al. (2019) found that there was no significance in the relationship between the two variables.

H_2: Availability bias positively influences investment decisions

Herding bias is the tendency of an individual to imitate the rational and irrational judgments of others (Muhammad et al., 2023). In the stock market, investors often start selling shares due to uncertainty and fear of loss. An investor sees information from other informed individuals and then follows the movement in selling shares (Ahmed et al., 2022). Herding bias on investment decisions has a significant positive relationship based on the results of Abideen et al. (2023). Hossain and Siddiqua (2022) also found a significant positive relationship related to herding bias on investment decisions. Almansour et al. (2023) also confirmed that herding bias had a significant positive effect on investment decisions. In addition to these three studies, Muhammad et al. (2023) found that the effect of herding bias on investment decisions is significantly negative with a value of $\beta = -0.079$. However, Ahmed et al. (2022) found insignificant results regarding the relationship between herding bias and investment decisions.

H_3: Herding bias positively influences investment decisions

Overconfidence bias is a bias with an attitude that tends to overestimate investment ability and often takes unnecessary risks (Almansour et al., 2023). Investors who have a high level of overconfidence bias consider that the opinions are more trustworthy than others (Jain et al., 2023). Hossain and Siddiqua (2022) stated that overconfidence in assessing stock prices on unnecessary investment transactions can lead to poor decisions.

A previous study showed a significantly positive relationship between overconfidence bias and investment decisions (Almansour et al., 2023). Jain et al. (2023) also found the result that the relationship between overconfidence bias and investment decision was significantly positive with

a value of β = 0.102. In addition, Budiman (2019) reported that there was a significant positive relationship between overconfidence bias and investment decisions. Hossain and Siddiqua (2022) and Manalu et al. (2023) also produced a significant positive effect on the relationship between overconfidence bias and investment decisions. However, Muhammad et al. (2023) found that the effect of overconfidence bias on investment decisions is significantly negative with a value of β = -0.284. Abideen et al. (2023) and Candy & Vincent (2021) found that the relationship between overconfidence bias and investment decisions was insignificant.

H_4: Overconfidence bias positively influences investment decisions

According to Ahmed et al. (2022), the disposition effect is the tendency of investors to avoid losses that can be realized rather than expected profits. A previous study stated that the effect of this disposition effect can be felt more over a long than short period (Ferdinand, 2023). In essence, this disposition effect shows the tendency of investors to keep shares when the price drops and immediately sell when there is an increase. This is done with the main objective of avoiding losses that can be realized compared to the possible profits available (Almansour et al., 2023).

Ahmed et al. (2022) stated that there was a positive significant relationship related to the disposition effect relationship with investment decisions. Afriani and Halmawati (2019) also found that the disposition effect affected the risk perception and investment decisions of an individual. The results of this study showed that investors who experience the "disposition effect" tend to be more risk-seeking after experiencing losses, suggesting a change in risk perception. However, Nareswari et al. (2022) stated that the relationship between the disposition effect to risk perception is significantly negative. In contrast to these three studies, Almansour et al. (2023) and Abideen et al. (2023) found that the relationship between disposition effect and investment decision is insignificant.

H_5: Disposition effects positively influence investment decisions

Risk perception functions as a variable that contributes to influence of a study (Ishfaq et al., 2020). This variable is considered in accordance with the opportunity for profit or loss. Risk perception is the severity and features of risk as measured by investors (Chen et al., 2022). According to prospect theory, investors prefer to make investments and decisions based on the possibility of perceived gains rather than the perceived risk of loss, even though the outcome is uncertain (Baker et al., 2019).

The significant positive relationship between risk perception and investment decisions carries important implications for various stakeholders in the Saudi financial landscape (Almansour et al., 2023). Chen et al. (2022) examined how the inclusion of historical risk perception data can improve investment decision-making. The study found that including historical risk perception data improved the accuracy of investment return predictions, showing the important role of risk perception in investment decision-making. Ishfaq et al. (2020) and (Yenny et al., 2023) also found that perception has a significant positive effect on decisions. Holzmeister et al. (2020) stated that risk perception and loss aversion behavior are the most important components in investment decision-making. Consistent with the current results, Saputra et al. (2020) reported a negative relationship, showing that the higher the level of risk in investing, the lower the tendency to make investment decisions.

H_6: Risk perception positively influences investment decisions

A previous study by Ahmed et al. (2022) showed that blue-chip stocks can have a very negative effect on risk perception. The result of this study also confirmed that blue-chip stocks can function as eliminators of risk perception and investors are more concerned with the benefits

achieved. Furthermore, Shiva and Singh (2020) found that blue-chip stocks can have a very negative effect on risk perception. The result also confirmed that blue-chip stocks can function as eliminators of stock risk perception and investors are more concerned with the benefits achieved. According to Almansour et al. (2023)**,** blue-chip stock bias has a positive significant effect on risk perception. In this context, investors consider an investment to be riskier than the original state, leading to suboptimal investment portfolio decisions and results.

H_7: Blue-chip stock bias positively influences risk perception

The results of a study examining the relationship between availability bias and risk perception were found to be significantly positive by Jain et al. (2023)**.** This was because investors rely on easily accessible information, which can cause overestimation or misinterpretation of potential risks. The bias leads investors to focus on immediate or prominent data, thereby increasing the sense of uncertainty and affecting risk perception. In contrast to the results, Paruchuri and Misangyi (2015) found that availability bias can have a significant negative effect on risk perception.

H_8: Availability bias positively influences risk perception

Almansour et al. (2023) found that the relationship between herding bias and risk perception was significantly positive because investors feel safer following the crowd. Investors believe that the risk of negative outcomes is lower when many others are making the same investment decisions. This causes a perception of reduced risk, even when actual risk may remain unchanged. Ahmed et al. (2022) also found that herding bias had a significant positive effect on risk perception. With a p-value of 0.011, Wibowo et al. (2023) stated that there was a significant positive relationship between herding bias and risk perception.

H_9: Herding bias positively influences risk perception

The relationship between overconfidence bias and risk perception was said to be significantly negative by Muhammad et al. (2023) with a value of $\beta = -0.824$. However, Jain et al. (2023) found that the relationship between overconfidence bias and risk perception was significantly positive with a value of $\beta = 0.086$. Overconfidence leads investors to rely heavily on personal knowledge and abilities, often overestimating the capacity to assess risks accurately. This reliance on private information diminishes the sensitivity to external risks, resulting in a lower perception of risk associated with investment decisions. In contrast to these results, Almansour et al. (2023) found that the relationship between overconfidence bias and risk perception was insignificant. This was because overconfident investors may not strongly alter perception of risk, showing that investment behavior was driven by other factors.

H_{10}: Overconfidence bias positively influences risk perception

The disposition effect was reported to have a significant positive influence on risk perception by Almansour et al. (2023) with a regression coefficient value of 0.223. The disposition effect causes investors to cling to losing investments in hopes of recovery while underestimating the risks of selling winning investments. This behavior skews the perception of risk, as the tendency of recovery and the associated dangers of choices were misjudged. The results of this study are also supported by Ahmed et al. (2022) who found a positive significant effect related to the relationship between disposition effect and risk perception. Razen et al. (2020) examined how risk perception varies between professionals and non-professionals, influencing investment decisions. Professionals bear stock losses better than non-professional investors. This also contributes to the

statement that investment decisions mitigate the disposition of securities and professionals are more reluctant to realize losses and are biased in making risky decisions.

H_{11}: Disposition effect positively influences risk perception

Risk perception can significantly mediate the relationship between overconfidence and availability bias with investment decisions, as reported by Jain et al. (2023) with a value of β = 0.086. This variable mediates the relationship between availability bias and investment decisions by influencing the actions of investors on perceived risks. Investors may shy away from investing when available information is viewed as risky. Meanwhile, positive information reduces perceived risk, increasing the inclination to invest. Ahmed et al. (2022) also found that risk perception significantly mediates the relationship between blue-chip stock bias and investment decisions. However, risk perception does not meditate between herding bias and disposition effect with investment decisions. Reviewing the study conducted by Muhammad et al. (2023), risk perception negatively mediates the relationship between overconfidence and herding bias with investment decisions, based on coefficient values of -0.493 and -0.078. Almansour et al. (2023) found that herding, blue-chip stocks, and overconfidence bias, as well as disposition effect mediated by risk perception to investment decisions, are significantly positive with coefficient values of 0.622, 0.716, 0.548, and 0.665, respectively. The lowered perception of risk due to herding leads investors to feel more confident in making decisions. Consequently, this increased confidence translates into actual investment decisions, often resulting in a lack of diversification and higher risk. As a result of the disposition effect, biased risk perceptions lead investors to make irrational decisions, such as holding onto losses longer than advisable. This tendency can culminate in poor investment decisions that deviate from financial objectives and risk tolerance. Overconfident investors may perceive risks as lower than the original state, thereby influencing the decision-making process. Consequently, the distorted perception of risk leads to more aggressive investment decision that are inconsistent with the actual market conditions. Ferdinand (2023) also reported that risk perception significantly mediates the relationship between overconfidence bias and investment decisions.

H_{12}: Risk perception positively mediates the relationship between behavioral bias and investment decisions

2. Research Methods

A purposive sampling method was used to select fintech platform users as the sample. This method ensured the relevance of the sample to the study of investor decision-making factors. To determine the sample size, a formula proposed by Hair et al. (2010) was applied, resulting in a minimum requirement of 360 respondents given the 36-item statements used. Data was collected through an online questionnaire using a Likert scale from October 2023 to January 2024.

Structural Equation Modeling (SEM) was used to analyze the data, as it is well-suited for examining complex relationships between variables. According to Jain et al. (2023), SEM is particularly effective in such contexts. The study employed SmartPLS, a tool chosen for its compatibility with Likert scale data and its flexibility in analysis. This approach allowed for simultaneous assessment of measurement and structural models.

Table 1. Variable Statements

Variables	Statements
Investment Decision	The return rate of your recent stock investment meets your expectations; Your rate of return is equal to or higher than the average return rate of the market; You feel satisfied with your investment decisions in the last year (including selling, buying, choosing stocks, and deciding the stock volumes).
Risk Perception	You associate the word "risk" with the idea of "opportunity"; Assume that risk in investment is a situation to be avoided; There is risk involved, it is much more acceptable if risk is confined to my potential for gains from taking the risk; Want to earn more than my current income level in the long run; Look for businesses or employment with higher income; Would show my willingness to take risks in financial decisions.
Blue-Chip Stocks Bias	You would purchase it at once; research it first and then purchase it; Would consider similar cases; Would consider purchasing it; Would decide according to the trend in the market.
Availability Bias	You prefer to invest in a stock that has been evaluated by a well-known expert; Your investment decision depends on new and favorable (positive) information released regarding the stock; If someone had told me that a financial crisis is about to happen in a years' time. I would be Convince; I prefer to buy stocks on the days when the value of Index increases; I prefer to sell stocks on the days when the value of the Index decreases.
Herding Bias	Other investors' decisions of choosing stock types have effect on your investment decisions; Other investors' decisions of the stock volume have effect on your investment decisions; Other investors' decisions of buying and selling stocks have effect on your investment decisions; You usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market; You believe that your skills and knowledge of stock market can help you to outperform the market; You rely on your previous experiences in the market for your next investment; You forecast the changes in stock prices in the future based on the recent stock prices.
Overconfidence Bias	I am sure that my ability is better than that of others to choose investment assets; I am able to fully control the results of my investment decisions; The success of my investment in the past was due to the unique expertise I have; I am sure of the investment performance I make.
Disposition Effect	You believe to sell your stock early when it gives you a small profit; You believe to sell your stock early when it gives you a small loss; You hold your losing stock until it gives you a profit; You did not want a huge profit on your stock; You did not hold a stock for a long period of time; You prefer selling the winning stock rather than holding it.

Source: processed data

Using SmartPLS, the bootstrapping method was applied to estimate path coefficients and significance levels, ensuring greater accuracy in the model. The analysis revealed significant relationships between investor biases, risk perception, and investment decisions. This methodology provided valuable insights into the investment behaviors and risk perceptions of fintech users.

3. Results and Discussions

3.1 Demographic Factors

Many investment instruments can be accessed by the public simply by using smartphones based on the rapid development of fintech. To investigate this investment behavior, questionnaires were distributed to 470 investors and successfully collected 400 responses, as shown in Table 2. The majority of respondents are Generation Z residents of Batam City, accounting for 62%, and aged 20-25 years. The respondents have moderate incomes (Rp 3,500,000 - Rp 5,000,000) and private-sector employment (53%). The majority have 1-3 years of fintech investment experience and prefer mutual funds, stocks, bonds, and deposits.

Table 2. Respondents Demographic

Description		Frequency (N = 400)	Percentage
Gender			
	Male	190	47.50%
	Female	210	52.50%
Age			
	<20 years old	15	3.75%
	20-25 years old	248	62.00%
	26-30 years old	98	24.50%
	>30 years old	39	9.75%
Educational Qualification			
	Elementary school	0	0.00%
	Pre-High school	2	0.50%
	High school	285	71.25%
	Undergraduate	113	28.25%
	Others	0	0.00%
Domicile			
	Batam city	394	98.50%
	Others	6	1.50%
Status			
	Students	135	33.75%
	Private employees	212	53.00%
	Public employees	36	9.00%
	Entrepreneur	17	4.25%
Income			
	<Rp 3,500,000	34	8.50%
	Rp 3,500,000 - Rp 5,000,000	318	79.50%
	Rp 5,000,001 - Rp 7,500,000	26	6.50%
	Rp 7,500,001 - Rp 10,000,000	10	2.50%
	>Rp 10,000,000	12	3.00%
Experience (years)			
	Have not	8	2.00%
	<1	99	24.75%
	1-3	217	54.25%
	4-5	62	15.50%
	5 onward	14	3.50%
Investment Instrument			
	Stocks	108	27.00%
	Mutual funds	119	29.75%
	Bond	104	26.00%
	Deposit	99	24.75%
	Gold	59	14.75%
	Others	3	0.75%

Source: processed data

Female respondents slightly outnumber males, indicating a balanced gender representation in fintech investments. Educationally, most participants are high school graduates, emphasizing the inclusivity of fintech platforms in reaching individuals from various academic backgrounds. Interestingly, nearly a quarter of respondents have less than a year of investment experience, suggesting that fintech is drawing in new and inexperienced investors. These trends highlight the role of fintech in democratizing access to investment opportunities for a wide-ranging demographic.

3.2 Convergent Validity

The study applied validity testing reviewed through convergent validity to assess the constructs in the study. Convergent validity examines the positive correlation between the indicators of a given construct providing evidence that the measures accurately capture the underlying concept. According to Wibowo et al. (2023), the required values for valid constructs are above 0.5 and 0.7 for Average Variance Extracted (AVE) and outer loadings, respectively. Table 3 shows the results of the convergent validity test of each variable used in the analysis.

Table 3. Convergent Validity Test

Construct	Items	Outer Loadings	AVE	Conclusion
Investment Decision	ID1	0.808	0.676	Valid
	ID2	0.790		
	ID3	0.866		
Risk Perception	RP1	0.761	0.558	Valid
	RP2	0.703		
	RP3	0.771		
	RP4	0.720		
	RP5	0.725		
	RP6	0.799		
Blue-Chip Stocks Bias	BC1	0.782	0.578	Valid
	BC2	0.702		
	BC3	0.771		
	BC4	0.765		
	BC5	0.778		
Availability Bias	AB1	0.788	0.606	Valid
	AB2	0.733		
	AB3	0.788		
	AB4	0.794		
	AB5	0.787		
Herding Bias	HB1	0.820	0.622	Valid
	HB2	0.756		
	HB3	0.806		
	HB4	0.815		
	HB5	0.713		
	HB6	0.770		
	HB7	0.835		
Overconfidence Bias	OC1	0.845	0.647	Valid
	OC2	0.726		
	OC3	0.816		
	OC4	0.826		
Disposition Effect	DE1	0.815	0.634	Valid
	DE2	0.818		
	DE3	0.790		
	DE4	0.770		
	DE5	0.797		
	DE6	0.787		

Source: processed data

Based on Table 3, all variables tested using convergent validity were considered valid. The variables in this study also show validity with the smallest AVE value at 0.558. Based on these results, all variables were considered valid. This implies that each indicator is capable of representing the tested variable.

3.3 Discriminant Validity

The validity test conducted to evaluate the discriminant validity of the constructs is presented in Table 4. Discriminant validity ensures that the constructs measure distinct concepts and are not merely reflecting a single underlying factor. The results confirm that the constructs have adequate discriminant validity. This indicates that each construct is sufficiently differentiated from the others.

Table 4. Discriminant Validity Test

	AB	BC	DE	HB	ID	OC	RP
AB1	0.788	0.700	0.591	0.692	0.691	0.652	0.708
AB2	0.733	0.700	0.58	0.655	0.674	0.646	0.692
AB3	0.788	0.739	0.751	0.758	0.739	0.748	0.721
AB4	0.794	0.670	0.712	0.711	0.675	0.700	0.689
AB5	0.787	0.681	0.728	0.704	0.658	0.690	0.668
BC1	0.723	0.782	0.675	0.684	0.717	0.689	0.700
BC2	0.646	0.702	0.547	0.635	0.640	0.604	0.669
BC3	0.689	0.771	0.586	0.696	0.693	0.645	0.745
BC4	0.656	0.765	0.585	0.676	0.658	0.611	0.694
BC5	0.697	0.778	0.625	0.689	0.654	0.626	0.670
DE1	0.700	0.640	0.815	0.725	0.644	0.701	0.627
DE2	0.733	0.662	0.818	0.756	0.671	0.739	0.655
DE3	0.730	0.687	0.790	0.757	0.703	0.740	0.700
DE4	0.643	0.562	0.770	0.652	0.591	0.683	0.549
DE5	0.648	0.610	0.797	0.672	0.618	0.681	0.618
DE6	0.668	0.623	0.787	0.703	0.636	0.679	0.612
HB1	0.710	0.721	0.755	0.820	0.694	0.721	0.702
HB2	0.706	0.677	0.686	0.756	0.648	0.671	0.672
HB3	0.751	0.700	0.717	0.806	0.681	0.734	0.704
HB4	0.717	0.714	0.747	0.815	0.688	0.726	0.691
HB5	0.692	0.684	0.665	0.713	0.650	0.692	0.682
HB6	0.698	0.682	0.658	0.770	0.672	0.680	0.702
HB7	0.724	0.731	0.710	0.835	0.712	0.730	0.711
ID1	0.734	0.717	0.684	0.699	0.808	0.692	0.733
ID2	0.705	0.720	0.635	0.698	0.790	0.678	0.697
ID3	0.741	0.747	0.679	0.723	0.866	0.709	0.749
OC1	0.727	0.654	0.768	0.733	0.662	0.845	0.651
OC2	0.641	0.652	0.649	0.657	0.655	0.726	0.635
OC3	0.753	0.708	0.760	0.768	0.709	0.816	0.742
OC4	0.718	0.673	0.668	0.725	0.683	0.826	0.706
RP1	0.669	0.689	0.591	0.673	0.627	0.650	0.761
RP2	0.706	0.652	0.697	0.717	0.639	0.686	0.703
RP3	0.702	0.733	0.631	0.700	0.719	0.649	0.771
RP4	0.625	0.671	0.478	0.587	0.642	0.580	0.720
RP5	0.631	0.649	0.522	0.621	0.620	0.597	0.725
RP6	0.677	0.709	0.616	0.650	0.709	0.657	0.799

Source: processed data

Based on the results, all variables showed a high degree of validity suitable for discriminant analysis. This conclusion was substantiated by the significant cross-loading values exceeding 0.7 across the majority of variables. Even in cases where this threshold was not met, the indicators within each variable cluster cohesively, showing the distinctiveness for discriminant validity testing.

3.4 Reliability Test

A reliability test was done on the study's core parts, looking at Cronbach's alpha and composite reliability. These numbers show if the measures are consistent. Wibowo et al. (2023) say 0.7 is the cutoff for reliability. Table 5 shows the results and all the variables passed, with numbers above 0.7, suggesting that the study's foundation is solid.

Table 5. Reliability Test

Construct	Cronbach Alpha	Composite Reliability	Conclusion
Investment Decision	0.759	0.862	Reliable
Risk Perception	0.841	0.883	Reliable
Blue-Chip Stocks Bias	0.817	0.872	Reliable
Availability Bias	0.837	0.885	Reliable
Herding Bias	0.898	0.920	Reliable
Overconfidence Bias	0.817	0.880	Reliable
Disposition Effect	0.885	0.912	Reliable

Source: processed data

The results demonstrated satisfactory reliability, with all variables surpassing the minimum thresholds of 0.759 for Cronbach's alpha and 0.862 for composite reliability. This outcome validates the measurement tool's efficacy and accuracy in capturing the intended constructs. The reliable scores attest to the study's methodological rigor, ensuring that the findings accurately reflect the underlying concepts. Consequently, the results possess sufficient credibility for informed application in subsequent analyses and discussions concerning investment decisions and behavioral biases.

3.5 Hypotheses Confirmation: Direct Effect

The p-value serves as a crucial benchmark for statistical significance in evaluating the relationship between variables, with a threshold of 0.005. In this study, the direct effects of various biases on investment decisions and risk perception were analyzed, showing clear and impactful results. Table 6 shows the hypotheses tested, suggesting the significant effects of certain biases on investment decisions. The results decisively show which behavioral biases exert a strong influence on decision-making in financial contexts.

Table 6. Direct Effect

Hypotheses	Path	P Values	Result
H_1	AB => ID	0.023	Accepted
H_2	BC => ID	0.001	Accepted
H_3	HB => ID	0.822	Rejected
H_4	OC => ID	0.131	Rejected
H_5	DE => ID	0.152	Rejected
H_6	RP => ID	0.005	Accepted
H_7	BC => RP	0.000	Accepted
H_8	AB => RP	0.000	Accepted
H_9	HB => RP	0.063	Rejected
H_{10}	OC => RP	0.011	Accepted
H_{11}	DE => RP	0.052	Accepted

Source: processed data

The result of this study showed that merely two behavioral biases, namely availability and blue-chip stock had a significant positive effect on both investment decisions and risk perception. These results are consistent with the report of Cuandra and Tan (2021) and Hesniati (2020) that availability bias significantly affects investment decisions. The significant positive effect of availability bias on investment decisions and risk perception is based on the behavioral finance tenet that individuals often rely on easily accessible information to make judgments. This availability heuristic can lead to biased estimates and suboptimal decisions (Kahneman & Tversky, 1979). The result showed that young, time-constrained investors are particularly susceptible to this bias in the role of demographic factors in shaping cognitive processes. Based on behavioral finance, individual characteristics, such as age and occupation, interact with cognitive biases to influence financial behavior (Barberis & Thaler, 2003). Ahmed et al. (2022) explained the significant positive effect of blue-chip stock bias on investment decisions, attributing the situation to investors' reduced concern about potential losses. Consistent with the result, this present study showed that young, inexperienced investors in Batam with moderate incomes tend to perceive blue-chip stocks as stable and secure investments. This preference is based on the loss aversion principle in behavioral finance, where individuals prioritize avoiding losses over achieving gains (Kahneman & Tversky, 1979). Prospect theory further explains this behavior, showing how people tend to overweight potential losses and underweight potential gains.

Fintech platforms may inadvertently amplify this bias by preferentially recommending blue-chip stocks due to perceived lower risk profiles. This reinforcement of pre-existing preferences can lead to suboptimal investment decisions. The study also showed that overconfidence bias and the disposition effect significantly affect risk perception but not investment decisions. Among Generation Z investors in Batam City who use fintech platforms, investment decisions are guided by data-driven insights and recommendations provided by these platforms. However, overconfidence leads young investors to overestimate personal knowledge and control. Disposition effect causes young investors to hold onto losing investments longer, underestimating the associated risks. These results are consistent with the reports of Candy and Vincent (2021), Jain et al. (2023), and Almansour et al. (2023). In these studies, the notion that while behavioral biases can distort perceptions, the influence on decision-making can be attenuated by certain factors, such as the use of technology-driven investment tools, was supported.

Herding bias does not significantly affect either investment decisions or risk perception among Generation Z investors in Batam. This result is consistent with the behavioral finance study suggesting that individual decision-making can deviate from group behavior under certain conditions. The provision of personalized recommendations through fintech platforms, combined with the diverse experience levels and cautious methods of investors, appears to limit the sway of herd mentality in this context. This statement was supported by the evidence provided by Ahmed et al. (2022).

Generation Z investors in Batam, characterized by relatively stable income, experience with fintech platforms, and age, are well-positioned to capitalize on this relationship. The ability of young investors to assess and manage investment risks, fostered by the interaction with fintech platforms, contributes to a more strategic method of investing. This result is consistent with the reports of Almansour et al. (2023), Chen et al. (2022), Ishfaq et al. (2020), Holzmeister et al. (2020), and Saputra et al. (2020), which show the importance of risk perception in investment decision-making.

3.6 Hypotheses Confirmation: Indirect Effect

To investigate relationships between variables, hypothesis testing employed a stringent p-value threshold of 0.005 to determine statistical significance for indirect relationships. This analytical approach provides valuable insights into how specific biases influence investment decisions through risk perception. By examining indirect effects, this study uncovers the underlying mechanisms driving investment decision-making. Table 7 presents the results, highlighting paths with significant indirect effects and underscoring the pivotal role biases play in shaping investment outcomes.

Table 7. Indirect Effect

Path	P Values	Result
AB => RP => ID	0.041	Accepted
BC => RP => ID	0.003	Accepted
DE => RP => ID	0.099	Rejected
HB => RP => ID	0.139	Rejected
OC => RP => ID	0.059	Rejected

Source: processed data

The result of this study found that only availability and blue-chip stock bias significantly and positively influence investment decisions when introducing risk perception as a mediating variable. This result was consistent with the report of Jain et al. (2023) and Ahmed et al. (2022) and also supports behavioral finance theories suggesting that easily accessible information can distort perceptions and influence decision-making. The high visibility of blue-chip stocks in financial media contributes to the association with higher perceived risk, thereby mediating the relationship between availability bias and investment decisions. Meanwhile, disposition effect, herding bias, and overconfidence bias exhibited no significant indirect effects on investment decisions through risk perception. This result suggests that the biases primarily operate through psychological mechanisms rather than being mediated by a focused evaluation of risk. The tendency to hold onto winning investments (disposition effect), mimic the actions of others (herding bias), and overestimate personal abilities (overconfidence) may bypass the cognitive process of risk assessment in influencing investment behavior.

3.7 R Square Test

The R Square test is a fundamental measure in regression analysis that quantifies the proportion of variance in the dependent variables explained by the independent. A high R Square value shows the effectiveness of the model in capturing the underlying relationships. Additionally, the adjusted R Square balances the number of predictors, providing a refined assessment of the predictive power of the model. In this context, the results show that the model effectively explains a significant portion of the variation in both investment decisions and risk perception. These values affirm the robustness of the model, ensuring the reliability in drawing conclusions from the data.

Table 8. R Square Test

Variable	R Square	R Square Adjusted
Investment Decision	0.844	0.841
Risk Perception	0.877	0.875

Source: processed data

The investment model explains 84.4% of investment decisions' variation (R Squared: 0.844). Adjusted R Squared (0.841) confirms strong explanatory power. For risk perception, R Squared (0.877) shows high explanation by independent variables. Adjusted R Squared (0.875) confirms robust model fit. Results indicate that the independent variables effectively capture factors influencing investment decisions and risk perception, with little benefit from adding more predictors.

4. Conclusions

In conclusion, the study investigated the interplay of availability, blue-chip stock, herding, overconfidence bias, and disposition effect on investment decisions and risk perception. The result showed significant effects of availability and blue-chip stock bias on both investment decisions and risk perception while herding bias exerted no significant influence. Overconfidence bias and disposition effect primarily affected risk perception. Moreover, this study showed the indirect influence of availability and blue-chip stock bias on investment decisions through the effect on risk perception. The study extended prospect theory to fintech investments and showed the need to enhance financial literacy and investor protection in Indonesia. The limitations faced in this study included the narrow geographic sample, reliance on online surveys, and the exclusion of external factors, such as market conditions and government policies. Future investigations were required to broaden the sample, incorporate diverse methods, such as interviews, and consider external factors for a more comprehensive analysis.

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