International Journal of Business and Quality Research

https://e-journal.citakonsultindo.or.id/index.php/IJBQR
E-ISSN: 2985-9468

The Effect of Loss Aversion and Mental Accounting on Losing Stock Holding Behavior among Individual Stock Investors

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Abstract

The rapid growth of retail stock investors in Indonesia has not always been matched by rational trading decisions. One of the most common biases is the tendency to hold losing stocks too long and sell winning stocks too early, known as the disposition effect. While previous studies have examined the effect of behavioral biases on investment decisions in general, studies addressing the specific behavior of holding losing stocks seem scanty. Therefore, this study examines the effect of loss aversion and mental accounting on losing stock holding behavior among individual stock investors in Indonesia. A quantitative cross-sectional survey design was adopted, while purposive sampling was used to select 150 individual investors who hold a Single Investor Identification (SID) number and have held stocks at a loss. Data were collected with a structured questionnaire and analyzed using multiple linear regression at $p < .05$ level of significance. The results showed that loss aversion ($\beta = .310$, $p < .001$) and mental accounting ($\beta = .244$, $p = .002$) each had a positive and significant effect on losing stock holding behavior, and both jointly predicted the behavior, $R^2 = .198$, $F(2, 147) = 18.140$, $p < .001$, with loss aversion as the dominant factor. The two variables explained 18.7% of the variance in losing stock holding behavior. The study concludes that investors' reluctance to realize losses stems both from the pain of losses and from the separate mental accounts investors create for each stock, anchored on the purchase price. The study recommends that investor education should emphasize cut-loss discipline and whole-portfolio evaluation.

Keywords: Loss Aversion, Mental Accounting, Disposition Effect, Losing Stock Holding, Individual Investors

INTRODUCTION

The Indonesian capital market has experienced very rapid growth in the number of investors in recent years. Data from the Indonesian Central Securities Depository (KSEI)

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show that the number of capital market Single Investor Identification (SID) numbers reached 20.12 million as of 19 December 2025, an increase of about 35% compared with the end of 2024. Over the same period, the number of stock investors grew by 33% to 8,504,074 SIDs (Infobanknews, 2025). Most of these new investors are young retail investors who enter the market through online trading applications. This ease of access broadens financial inclusion, but it also opens room for investment decisions that are driven more by emotions and heuristics than by fundamental analysis.

Classical finance theory assumes that investors are rational and evaluate every decision on the basis of expected future returns and risk. Within this framework, the purchase price of a stock is a sunk cost that is irrelevant to the decision to sell or hold. In reality, many investors use the purchase price as their main reference point. They quickly sell stocks that have gained, but are reluctant to sell stocks that are at a loss in the hope that prices will return to the break-even point. Shefrin and Statman (1985) called this pattern the *disposition effect*, that is, the tendency of *selling winners too early and riding losers too long*.

The disposition effect has been widely documented. Odean (1998) found that individual investors in the United States were more likely to realize gains than losses, even though the losing stocks they held subsequently performed worse, on average, than the winning stocks they sold. Grinblatt and Keloharju (2001) found a similar pattern among Finnish investors, while Weber and Camerer (1998) replicated it in a laboratory experiment. This behavior is costly because investors lose the opportunity to move funds into more productive assets. Frazzini (2006) further showed that, in aggregate, the disposition effect causes stock prices to underreact to new information.

In the Indonesian capital market, the practice of holding losing stocks is widely known among retail investors as *saham nyangkut* ("stuck stocks"). Investors choose to "store" stocks whose prices have fallen far below the purchase price and are reluctant to cut losses, even when the issuer's prospects deteriorate. Research on the Indonesia Stock Exchange has also found indications of the disposition effect among stocks in the Kompas100 index (Fatima, 2021). With the dominance of young and relatively inexperienced investors, the risk of this behavior is even greater.

The two behavioral explanations most often associated with the disposition effect are loss aversion and mental accounting. Loss aversion, a core element of prospect theory (Kahneman & Tversky, 1979), holds that the pain of a loss is stronger than the pleasure of a gain of the same amount. Consequently, investors try to avoid realizing losses. Mental accounting (Thaler, 1985, 1999) explains that individuals separate their finances into "mental accounts" and evaluate each account separately. An investor who opens a mental

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account for each stock, with the purchase price as the reference point, feels that a loss only "really happens" when the stock is sold.

Previous Indonesian studies on these two biases have generally used investment decisions in general as the dependent variable, with inconsistent results. Anwar et al. (2023) found that loss aversion and mental accounting affected the investment decisions of small and medium industry actors. Budiman et al. (2025) found that loss aversion had a negative effect on stock investment decisions, whereas the direct effect of mental accounting was not significant. Fauji and Simatupang (2026) found the opposite among Generation Z investors: mental accounting had a significant negative effect, while loss aversion was not significant. Meanwhile, Beatrice et al. (2021) examined the disposition effect and mental accounting as biases influenced by demographic factors, rather than as interrelated variables.

Thus, a research gap remains. First, few Indonesian studies have specifically used losing stock holding behavior, as a concrete manifestation of the disposition effect, as the dependent variable of loss aversion and mental accounting. Second, findings on the effects of these two biases on investment decisions remain inconsistent, so they need to be tested on a more specific behavior. Therefore, the study sought to answer the question: Will loss aversion and mental accounting, individually and jointly, predict losing stock holding behavior among individual stock investors in Indonesia?

The result of this study would provide empirical evidence on the psychological mechanisms behind the disposition effect among retail investors in an emerging market. In addition, the study would provide valuable input to investors, securities companies, the Indonesia Stock Exchange (IDX), and the Financial Services Authority (OJK) in designing investor education programs that emphasize risk management discipline.

THEORETICAL REVIEW

Prospect Theory and Loss Aversion

Prospect theory was developed by Kahneman and Tversky (1979) as an alternative to expected utility theory in explaining decisions under uncertainty. The theory has three main features. First, individuals evaluate outcomes as gains or losses relative to a reference point, rather than in terms of final wealth. Second, the value function is concave in the domain of gains and convex in the domain of losses, so individuals tend to be risk-averse when gaining and risk-seeking when losing. Third, the value function is steeper in the domain of losses than in the domain of gains.

This third feature is called loss aversion. Tversky and Kahneman (1992) estimated that losses are felt roughly twice as strongly as gains of the same amount. In investing, loss aversion makes investors very uncomfortable when they have to acknowledge a loss.

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Benartzi and Thaler (1995) showed that the combination of loss aversion and overly frequent portfolio evaluation (*myopic loss aversion*) can explain why investors demand a high equity risk premium. Pompian (2011) classified loss aversion as an emotional bias that is difficult to correct because it stems from feelings rather than from informational errors.

Mental Accounting

Mental accounting is the set of cognitive operations used by individuals to organize, evaluate, and keep track of their financial activities (Thaler, 1999). According to Thaler (1985), individuals do not treat money as fully interchangeable (*fungible*). They separate money into "accounts" based on its source, purpose, or type of transaction, and then evaluate each account separately.

In stock investing, mental accounting appears when investors open a mental account for each stock and evaluate it against its purchase price. The account is only "closed" when the stock is sold. As long as the stock has not been sold, the loss is considered merely a *paper loss*. Closing an account at a loss means admitting failure, so investors prefer to postpone selling. This mindset also leads investors to ignore the performance of the portfolio as a whole and the benefits of diversification (Shefrin, 2002).

Disposition Effect and Losing Stock Holding Behavior

Shefrin and Statman (1985) introduced the term disposition effect to describe investors' tendency to sell winning stocks too early and hold losing stocks too long. They explained the phenomenon through a framework combining prospect theory, mental accounting, regret aversion, and self-control problems. Odean (1998) provided strong empirical evidence from the trading records of individual investors. Barberis and Xiong (2009) later showed that the disposition effect is most consistently explained by the utility experienced when gains or losses are realized (*realization utility*), rather than solely by the shape of an annual value function.

In this study, losing stock holding behavior is defined as an investor's tendency to keep stocks whose prices are below the purchase price, to postpone selling until the price returns to break-even, to be reluctant to cut losses, and to sell winning stocks faster than losing stocks. This behavior represents the "riding losers too long" side of the disposition effect and has the greatest impact on the portfolio performance of retail investors.

Hypothesis Development

According to prospect theory, investors holding losing stocks are in the domain of losses, where the value function is convex and individuals tend to seek risk. Holding a losing

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stock is a form of risk-taking: investors "bet" that the price will rise again so that they do not have to feel the pain of a realized loss (Kahneman & Tversky, 1979; Shefrin & Statman, 1985). The higher the loss aversion, the greater the pain to be avoided, and the stronger the urge to hold losing stocks. Weber and Camerer (1998) found experimentally that subjects sold fewer shares when prices fell below the purchase price. Budiman et al. (2025) also found that loss aversion influenced the stock investment decisions of Indonesian investors.

Investors who evaluate each stock separately, with the purchase price as the benchmark, view selling a losing stock as closing a mental account at a loss (Thaler, 1985, 1999). As long as the stock has not been sold, the account remains "open" and the loss is considered not to have occurred. This mindset encourages investors to postpone selling and even to buy more (*average down*) to lower the average price (Shefrin & Statman, 1985). Armansyah (2021) and Anwar et al. (2023) found that mental accounting influenced investment decisions.

Loss aversion is an emotional bias, whereas mental accounting is a cognitive bias (Pompian, 2011). The two complement each other: mental accounting determines the reference point and how a loss is framed, while loss aversion determines how strongly the framed loss is felt. Therefore, the two variables are expected to jointly influence losing stock holding behavior. The conceptual framework of the study is presented in Figure 1.

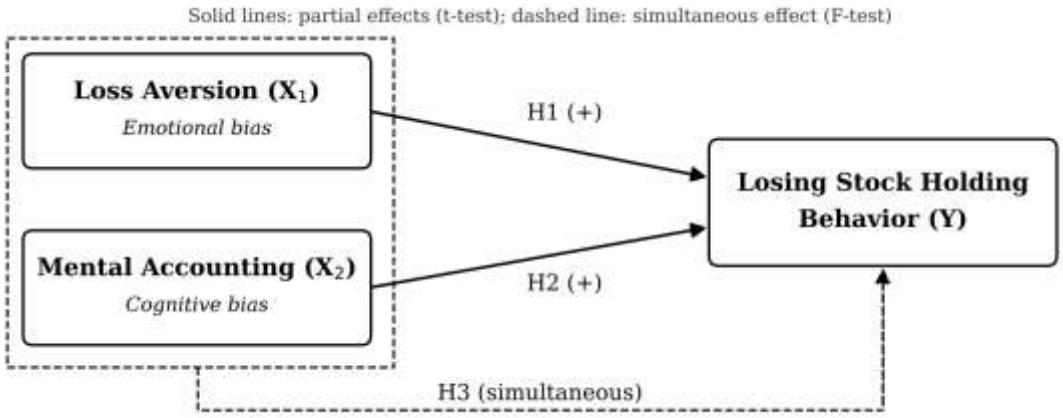


Figure 1: Conceptual Framework of the Study

The study tested the following hypotheses:

H1: Loss aversion will have a significant positive effect on losing stock holding behavior among individual stock investors.

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H2: Mental accounting will have a significant positive effect on losing stock holding behavior among individual stock investors.
H3: Loss aversion and mental accounting will jointly have a significant effect on losing stock holding behavior among individual stock investors.

METHOD

Research Design

The study adopted a quantitative cross-sectional survey design with a causal-associative approach, using a structured questionnaire to collect data from study participants. The independent variables were loss aversion (X_1) and mental accounting (X_2), while the dependent variable was losing stock holding behavior (Y).

Setting and Study Population

The study population comprised individual stock investors in Indonesia. Because the exact size and identity of the population could not be determined, the study focused on investors reachable through investor communities, university investment galleries, and social media, as these investors are directly involved in day-to-day trading decisions and are therefore likely to exhibit or be affected by losing stock holding behavior.

Sampling Technique Procedure

Purposive sampling technique (Sugiyono, 2019) was used to select participants who met three criteria: (1) holding a Single Investor Identification (SID) number and an active securities account; (2) having invested in stocks for at least six months; and (3) having held, or currently holding, a stock whose market price was below its purchase price (a losing position). The minimum sample size followed Hair et al. (2019), namely 15–20 observations per independent variable, as well as the minimum size commonly used for regression analysis. Of the 172 questionnaires returned, 14 were incomplete and 8 respondents did not meet the third criterion, leaving 150 questionnaires that were used for the analysis.

Instruments

A structured questionnaire consisting of three scales was used for data collection. All items were rated on a 5-point Likert response format of Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), and Strongly Agree (5), and each variable score was computed as the mean of its items. The full items are presented in Table 1.
Loss Aversion Scale was developed from the concept of Kahneman and Tversky (1979) to measure investors' tendency to feel losses more strongly than gains of the same amount and

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to avoid realizing losses. It is a 5-item scale. Sample items include: "My disappointment when I lose is greater than my pleasure when I gain the same amount" and "I feel like a failure if I sell a stock below its purchase price". Item-total correlations ranged from .694 to .819, and in the current study Cronbach's α = .810.

Mental Accounting Scale was developed from the concept of Thaler (1985, 1999) to measure investors' tendency to separate and evaluate each investment individually, using the purchase price as the reference point. It is a 4-item scale. Sample items include: "I evaluate the gain or loss of each stock separately, not as one portfolio" and "I consider a loss not to have occurred as long as the stock has not been sold". Item-total correlations ranged from .726 to .798, and in the current study Cronbach's α = .762.

Losing Stock Holding Behavior Scale was developed from Shefrin and Statman (1985) and Odean (1998) to measure investors' tendency to keep stocks in a losing position and postpone realizing losses. It is a 5-item scale. Sample items include: "I keep holding stocks whose prices have fallen below the purchase price in the hope that they will rise again" and "I am reluctant to cut losses even when the company's prospects deteriorate". Item-total correlations ranged from .745 to .825, and in the current study Cronbach's α = .847.

All item-total correlations (Pearson product moment) exceeded the critical r of .160 (n = 150; α = .05), and all Cronbach's α values exceeded .70, indicating that the items were valid and the scales reliable (Ghozali, 2018; Hair et al., 2019).

Table 1: Measurement Items and Item-Total Correlations

Variable	Code	Item	r
Loss aversion (X_1)	X1.1	My disappointment when I lose is greater than my pleasure when I gain the same amount.	.819
	X1.2	I avoid decisions that make investment losses real.	.745
	X1.3	I feel like a failure if I sell a stock below its purchase price.	.807
	X1.4	I think more about potential losses than potential gains when choosing stocks.	.702
	X1.5	I think about investment losses longer than investment gains.	.694
Mental accounting (X_2)	X2.1	I evaluate the gain or loss of each stock separately, not as one portfolio.	.726
	X2.2	The purchase price is my main benchmark in judging whether a stock is at a gain or a loss.	.778

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Variable	Code	Item	r
	X2.3	I separate my stock investment funds according to their source or purpose.	.798
	X2.4	I consider a loss not to have occurred as long as the stock has not been sold.	.755
Losing stock holding behavior (Y)	Y1	I keep holding stocks whose prices have fallen below the purchase price in the hope that they will rise again.	.788
	Y2	I am reluctant to cut losses even when the company's prospects deteriorate.	.825
	Y3	I sell stocks that are at a gain faster than stocks that are at a loss.	.781
	Y4	I postpone selling losing stocks until their price returns to the purchase price (break-even).	.745
	Y5	I buy more of a losing stock (average down) to lower its average price.	.797

Data Collection

Data were collected through an online questionnaire (Google Form) distributed through investor communities, university investment galleries, and social media in [months] 2026. The opening page informed potential participants of the purpose of the study, the screening criteria, and the voluntary nature of participation, and asked for their consent before they could proceed. Participants were assured of the confidentiality and anonymity of their responses. A total of 150 completed and eligible questionnaires were used for the analysis.

Data Analysis

IBM SPSS was used to analyze the data collected. Both descriptive and inferential statistics were computed. Descriptive statistics were used to describe participants' characteristics and the level of each variable, with mean scores categorized as very low (1.00–1.80), low (1.81–2.60), moderate (2.61–3.40), high (3.41–4.20), and very high (4.21–5.00). Before the hypotheses were tested, classical assumption tests were conducted: the Kolmogorov-Smirnov normality test, the multicollinearity test using tolerance and variance inflation factor (VIF) values, and the Glejser heteroscedasticity test (Ghozali, 2018). The hypotheses were tested using multiple linear regression analysis with the following equation:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

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where Y is losing stock holding behavior, X_1 is loss aversion, X_2 is mental accounting, α is the constant, β_1 and β_2 are the regression coefficients, and e is the error term. The t-test was used for H1 and H2, the F-test for H3, and the adjusted R^2 to assess the explanatory power of the model. The hypotheses were accepted at $p < .05$ level of significance when the direction of the coefficients was as predicted.

RESULTS

Table 2: Participants' Demographic Information

Variable	Categories	Frequency	%
Gender	Male	92	61.33
	Female	58	38.67
Age	17–25 yrs	58	38.67
	26–35 yrs	51	34.00
	36–45 yrs	27	18.00
	> 45 yrs	14	9.33
Occupation	Student	49	32.67
	Private employee	46	30.67
	Entrepreneur	25	16.67
	Civil servant	21	14.00
	Others	9	6.00
Stock investment experience	< 1 year	36	24.00
	1–3 years	67	44.67
	> 3–5 years	29	19.33
	> 5 years	18	12.00
Total		150	100.0

Table 2 presents the demographic variables of the study participants. Descriptive statistics revealed that the majority of the participants were male (61.33%), aged 17–25 years (38.67%), students (32.67%), and had 1–3 years of stock investment experience (44.67%). This profile is in line with the composition of Indonesian capital market investors, which is dominated by young investors.

Table 3: Descriptive Statistics of the Study Variables (n = 150)

Variable	Min.	Max.	Mean	SD	Category
Loss aversion (X_1)	1.20	5.00	3.62	.679	High
Mental accounting (X_2)	2.00	5.00	3.56	.671	High

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Variable	Min.	Max.	Mean	SD	Category
Losing stock holding behavior (Y)	1.40	5.00	3.40	.756	Moderate

Table 3 shows that the mean scores of loss aversion (3.62) and mental accounting (3.56) were in the high category, while the mean score of losing stock holding behavior (3.40) was at the upper limit of the moderate category. The item with the highest mean in the dependent variable was Y3 (3.61), namely the tendency to sell winning stocks faster than losing stocks, indicating that the basic pattern of the disposition effect was fairly strong among participants.

The regression model met the classical assumptions. The Kolmogorov-Smirnov test on the unstandardized residuals yielded a test statistic of .055 with Asymp. Sig. = .200 (> .05), indicating normally distributed residuals. The tolerance value of both independent variables was .923 (> .10) and the VIF was 1.083 (< 10), indicating no multicollinearity. The Glejser test yielded significance values of .501 for loss aversion and .658 for mental accounting (> .05), indicating no heteroscedasticity.

Testing the Hypotheses

Loss aversion and mental accounting will significantly predict losing stock holding behavior among individual stock investors, both individually and jointly. The hypotheses were tested using multiple linear regression and the results are presented in Tables 4a–c.

Table 4a: Model Summary of Loss Aversion and Mental Accounting on Losing Stock Holding Behavior

Model	R	R Square	Adjusted R^2	Std. Error of the Estimate
1	.445	.198	.187	.682

Table 4b: ANOVA of Loss Aversion and Mental Accounting on Losing Stock Holding Behavior

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	16.862	2	8.431	18.140	.000
Residual	68.322	147	.465		
Total	85.184	149			

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Table 4c: Coefficients Predicting Losing Stock Holding Behavior from Loss Aversion and Mental Accounting

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig.
(Constant)	1.172	.376		3.117	.002
Loss aversion	.346	.086	.310	4.036	.000
Mental accounting	.275	.087	.244	3.175	.002

Tables 4a–c show the results of the regression analysis carried out to determine whether loss aversion and mental accounting predict losing stock holding behavior. The resulting regression equation is $Y = 1.172 + 0.346X_1 + 0.275X_2 + e$. The results revealed that loss aversion had a positive and significant effect on losing stock holding behavior (β = .310, t = 4.036, p < .001). The unstandardized coefficient (B = .346) indicates that every one-point increase in loss aversion increases losing stock holding behavior by approximately .346 points, holding mental accounting constant. Thus, H1 was supported. Mental accounting also had a positive and significant effect (β = .244, t = 3.175, p = .002); every one-point increase in mental accounting increases losing stock holding behavior by approximately .275 points, holding loss aversion constant. Thus, H2 was supported.

Furthermore, loss aversion and mental accounting jointly predicted losing stock holding behavior, $R^2 = .198$, $F(2, 147) = 18.140$, $p < .001$. Thus, H3 was supported. The adjusted R^2 of .187 indicates that the two variables accounted for 18.7% of the variance in losing stock holding behavior, while the remaining 81.3% was explained by other factors outside the model, such as regret aversion, overconfidence, anchoring, financial literacy, and investment experience. Based on the standardized coefficients, loss aversion (β = .310) was a more dominant predictor than mental accounting (β = .244).

DISCUSSION

The first hypothesis, that loss aversion will significantly predict losing stock holding behavior, was supported. Investors who feel losses more strongly than gains tend to hold losing stocks longer. This finding is consistent with prospect theory (Kahneman & Tversky, 1979): in the domain of losses, investors become risk-seeking and choose to "bet" on a price recovery rather than realize the loss. The result corroborates the explanation of Shefrin and Statman (1985), the empirical evidence of Odean (1998), and the experimental findings of Weber and Camerer (1998).

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The high mean score of loss aversion (3.62) shows that participants were generally very disturbed by losses. Item X1.3, the feeling of failure when selling a stock below its purchase price, had a high item-total correlation (.807). This means that the pain of a loss is not only financial but is also related to the investor's self-image. This result reinforces the finding of Budiman et al. (2025) that loss aversion influences the decisions of Indonesian stock investors. The difference from Fauji and Simatupang (2026), who found loss aversion to be non-significant, is presumably because the dependent variable in this study is more specific, namely behavior when holding losing stocks, so that the effect of the pain of loss is easier to detect.

The second hypothesis, that mental accounting will significantly predict losing stock holding behavior, was also supported. Investors who evaluate each stock separately with the purchase price as the benchmark tend to hold losing stocks longer. This finding is in line with Thaler's (1985, 1999) argument that individuals are reluctant to close a mental account at a loss. As long as the stock has not been sold, the loss is considered to exist only "on paper", so investors do not feel they have really lost. Item X2.4 ("a loss has not occurred as long as the stock has not been sold") reflects this way of thinking. The finding is consistent with Armansyah (2021) and Anwar et al. (2023), who found an effect of mental accounting on investment decisions. However, it differs from Budiman et al. (2025), who found the direct effect of mental accounting on stock investment decisions to be non-significant. The difference likely arises because investment decisions in general cover many decisions, such as selecting stocks and timing purchases, whereas mental accounting is most relevant to the selling decision, when investors must decide whether to "close the account" of a stock.

The third hypothesis was supported as well: the two variables jointly influenced losing stock holding behavior, with loss aversion as the dominant factor. This result supports the view that the disposition effect stems from the interaction of cognitive and emotional biases (Shefrin & Statman, 1985; Pompian, 2011). Mental accounting determines how a loss is framed, that is, per stock and relative to the purchase price, while loss aversion determines how strongly investors want to avoid the loss so framed. The dominance of loss aversion is also consistent with Pompian's (2011) classification that emotional biases tend to be harder to correct than cognitive biases. The relatively small adjusted R^2 (18.7%) is reasonable for survey-based behavioral research, because the decision to hold losing stocks is also influenced by other factors. For example, Barberis and Xiong (2009) emphasized the role of utility experienced at the moment of realization, while Beatrice et al. (2021) found that the disposition effect was influenced by income and investment experience.

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CONCLUSION

The study investigated the effect of loss aversion and mental accounting on losing stock holding behavior among individual stock investors in Indonesia. The results confirmed that loss aversion and mental accounting each had a positive and significant effect on losing stock holding behavior, both individually and jointly. The stronger investors' pain from losses, the longer they hold losing stocks; and the stronger their tendency to evaluate each stock separately against its purchase price, the greater their tendency to postpone realizing losses. Loss aversion was the most dominant factor. Theoretically, these findings strengthen the prospect theory and mental accounting explanations of the disposition effect among retail investors in an emerging market.

Recommendations

The study puts forth the following recommendations. First, investors should set a loss limit (*stop loss*) at the time of purchase and evaluate stocks on the basis of their future prospects rather than their purchase price. Second, securities companies should provide reminder and *auto stop loss* features in their trading applications and display the performance of the portfolio as a whole, not only the gain or loss of each stock. Finally, the Indonesia Stock Exchange and the Financial Services Authority should incorporate material on behavioral biases, particularly the disposition effect, into education programs for novice investors.

Limitations and Suggestions for Further Study

The study has some limitations worth addressing in further study. To begin with, data were collected through self-report questionnaires, so they reflect participants' perceptions rather than actual transactions; therefore, further studies should use actual investor transaction data, for example with the *proportion of gains realized* and *proportion of losses realized* measures (Odean, 1998). In addition, the sample was selected purposively through an online survey, which limits the generalization of the results; therefore, larger and more representative samples would enhance generalization of findings. Finally, the model explained only 18.7% of the variance in losing stock holding behavior; therefore, further studies would benefit from the inclusion of regret aversion, overconfidence, financial literacy, and investment experience, either as independent or moderating variables.

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