

THE IMPACT OF BEHAVIORAL BIASES ON INVESTMENT BIAS: AN EMPIRICAL STUDY ON MSMEs IN INDONESIA

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Abstract:

This study aims to investigate the impact of behavioral biases, such as negative framing, illusion of control, overconfidence, and self-control, on investment bias. The data was collected through a field survey, with 200 respondents representing Troso ikat weaving micro, small, and medium enterprises (MSMEs) in Jepara, Indonesia. The data was analyzed using structural equation modeling (SEM) in SmartPLS. The results show that the illusion of control and overconfidence both have a positive impact on the investment bias; overconfidence mediates the impact of illusion of control on the investment bias; negative framing does not have a negative impact on the investment bias; and the self-control fails to moderate the significant impact of overconfidence on the investment bias.

Key words: investment bias, negative framing, illusion of control, overconfidence, self-control.

JEL classification: D22, G31, G41.

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1. INTRODUCTION

Micro, small, and medium enterprises (MSMEs) are worldwide acknowledged as drivers of socioeconomic transformation, growth, and sustainable development, creating jobs and contributing to the gross domestic product (GDP), as well as providing long-term community source of income (Lamptey et al., 2020; Ayalu et al., 2023). During economic downturns, the MSMEs are proven to be more resilient (Hapsari et al., 2014). The government strives to improve the MSMEs' performance through a variety of policy instruments. At the same time, the MSMEs are making efforts to improve their performance through increased investment.

Investment is a decisive factor for the growth of business performance (Gveroski & Jankuloska, 2017). Proportionally allocated investment, both in terms of value and goals, can help improve the business performance. In the opposite, inproportionally allocated investment can be damaging to the business due to high capital expenses and additional consequences, putting the business in financial distress. The MSMEs, like others, experience the phenomena of inaccurate investment, including the MSMEs of Troso ikat weaving craft – a traditional ikat weaving unique to Jepara Regency, Central Java Province, which has been very popular in Indonesia and even in other countries. Field observations suggested that the Troso ikat weaving MSMEs invested excessively in fixed assets, such as weaving machines and equipment, yet only 40% to 60% of them could function. The Troso ikat weaving MSME actors were overconfident in the future demand for their products, so they risked investing inproportionately in the weaving machines. However, the results were not as planned. This situation picturizes that the investment bias is unfavorable to the Troso ikat weaving MSME operations. For this reason, the impact of behavioral biases on the investment bias are interesting to be investigated. In addition, there are still very few studies on this topic in the real sector, although there are many in financial markets (Barber & Odian, 2001; Riaz & Iqbal, 2015; Ritika & Kishor, 2020; Khan et al., 2021; Evbayiro-Osagie & Chijuka, 2021; Saraskanrooda & Ghafourib, 2022).

The most common behavioral biases affecting the investment bias include (negative) framing effect, illusion of control, overconfidence, and self-control. The framing effect is a type of behavioral biases that is frequently cited as a contributing factor to the biases in the investment bias negatively (Wardani & Sukirno, 2014; Pasek et al., 2019; Fikri & Purnamasari, 2021). It refers to

equivalent descriptions, but can result in distinct decisions (Xie et al., 202). Further, the overconfidence has been widely studied, yet the research results were inconclusive. It was proven to cause the managers to make biased investment decisions (Mundi & Kaur, 2019; Hwang et al., 2020); and Bourezk et al. (2020) and Wang and Nuangjamnong (2022) found that overconfidence has no influence on the investment bias. Furthermore, Hofmann et al. (2012) defined the self-control as individuals' ability to control themselves to a positive direction. If someone is overconfident and has high self-control, the impact on investing bias will be lower. As a result, in this study, the self-control is employed as a moderator of the relationship between overconfidence and investing bias. In addition, this study includes the illusion of control, which can lead to the overconfidence (Nofsinger, 2010). The illusion of control has a direct impact on the investment bias (Hsu & Chen, 2017; Yasmin & Ferdaous, 2023).

Specifically, this present study aims to investigate (a) the impact of behavioral biases, such as negative framing, illusion of control, overconfidence, and self-control, on the investment bias at the Troso ikat weaving MSMEs; (b) the impact of illusion of control on the investment bias at the Troso ikat weaving MSMEs; (c) the mediating role of overconfidence on the significant impact of illusion of control on the investment bias at the Troso ikat weaving MSMEs; and (d) the moderating role of self-control on the significant impact of overconfidence on the investment bias at the Troso ikat weaving MSMEs. The results of this study are expected to significantly contribute to the behavioral finance literature, given there are limited behavioral bias studies investigating their impact on the investment bias in the real sector.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Behavioral finance is a significant development in financial studies, as it aims to merge psychology and finance to explain irrational investor behavior. Previously, standard financial researches overlooked behavioral components and failed to explain the biases existed when the investors made decisions. According to Leković (2020), the behavioral finance integrates scientific information from the psychology, sociology, anthropology, and economics, focusing on human issues and preventing further distance between the economic theory and social science. In contrast to the assumptions of rationality and comprehensive knowledge depicted by the standard finance, the behavioral finance highlights that in real life, people make decisions based on heuristics or behavioral biases (Kahneman dan Tversky, 1982).

The behavioral bias explains a psychological error that results from sentiment-driven behavior and leads to irrational investor behavior. Pompian (2021) attempted to divide the behavioral biases into two categories: cognitive bias and emotional bias. Cognitive bias is classified into two categories: belief perseverance bias – a person's tendency to rely on incorrect or illogical previous experiences or ideas, including conservatism, confirmation, representativeness, and illusion of control; and information processing bias – issues in the processing and interpretation of information, including mental accounting, negative framing, and recency bias. Meanwhile, the emotional bias prioritizes spontaneous thinking over the outcomes of logical thought or relies heavily on feelings, including loss aversion, overconfidence, and self-control. These numerous types of behavioral biases can lead to errors in decision making, as demonstrated by the investment bias.

Bias is the tendency to make certain types of errors (Sefrin, 2017). Accordingly, the investment bias is defined as an action that is considered inappropriate in the investment allocation. The negative framing is an example of biases that can influence the investment bias (Pasek et al., 2019). Wardani and Sukirno (2014) found that managers can be subjected to either positive or negative framing when making the investment decision. The positive framing implies that the investment is risk-free, whereas the negative framing implies that the investment is highly risky. According to Xiaoying and Wenquan (2015), the framing effect is unidirectional, where a person who is negatively framed is better equipped to handle risks, and their investment preferences lead to risky investments. As a result, if the business actors receive information in the form of negative

framing, they are more likely to ignore dangers, which can lead to investment misallocation. Therefore, the first hypothesis that can be proposed is as follows:

Nofsinger (2005) stated that the illusion of control is a sense of self-confidence that is able to predict the outcome of a decision, resulting in an overestimation of the results. A prior study on the Karachi stock market by Riaz and Iqbal (2015) discovered that the illusion of control has a detrimental impact on the investment returns. According to Hsu and Chen (2017), the illusion of control makes the managers feel confident about their ability to influence future situations, therefore they are more willing to spend by limiting or disregarding the risks and mistakes when taking actions. For this reason, it can be concluded that the business actors that have the illusion of control may neglect the risks and overestimate the investment allocations, resulting in the investment bias. Therefore, the second hypothesis that can be proposed is as follows:

Overconfidence is the behavior of someone who believes they have above-average abilities and exaggerates their knowledge, abilities, and information (Supramono et al., 2017; Pompian, 2012). The greater the level of overconfidence, the poorer the accuracy of investment predictions (Dittrich et al., 2001). Meanwhile, the illusion of control is a source of overconfidence (Nofsinger, 2005), thus it is not unexpected that Michael and Wohl (2009) provided empirical evidence that there is a link between the two. The business actors who believe they have control over future processes and conditions, or who experience the illusion of control, are more likely to be overconfident. Therefore, the third hypothesis that can be proposed is as follows:

According to Nofsinger (2010), someone who is overconfident is more likely to ignore risks. In other words, overconfident managers are more likely to make risky investments since they believe they can produce high returns from their investment activities. Previous researches have indicated that the overconfidence is the cause of decision-making errors that have an impact on business survival (Ben-David et al., 2007; Xiao et al., 2011; Mundi & Kaur, 2019; Gudmundsson & Lechner, 2013). Based on the description above, it may be argued that the overconfident business actors are bolder and more reckless in their investment bias, which can lead to excessive allocations in the business investments. Therefore, the fourth hypothesis that can be proposed is as follows:

Borges and Muniz (2018) stated that the illusion of control leads to risk avoidance, overconfidence, and estimation bias. It is believed that the overconfident business actors are more likely to spend on larger investments than those who are not. Furthermore, the overconfidence also causes the investment bias, including investment inefficiency, which has an impact on the business survival (Gudmundsson & Lechner, 2013; Hu et al., 2018). As a result, the overconfidence is assumed to mediate the impact of the illusion of control on the investment bias. Therefore, the fifth hypothesis that can be proposed is as follows:

The self-control is an individual's proclivity to examine the potential consequences of specific behaviors (Wolfe & Higgins, 2008). It also refers to an individual's ability to resist or steer themselves to a better path when confronted with temptations (Hofmann et al., 2012). The business actors with self-control are more cautious, taking into account a variety of factors before making the investment decisions, including whether or not to add more fixed assets. In this study, the self-control is expected to play a role in mitigating the impact of overconfidence on the investment bias. Therefore, the sixth hypothesis that can be proposed is as follows:

3. RESEARCH METHOD

This study employed an explanatory research design because it aimed to test six hypotheses formulated based on the results of the literature review, as follows:

H1: Negative framing has a positive impact on the investment bias at the Troso ikat weaving MSMEs

H2: Illusion of control has a positive impact on the investment bias at the Troso ikat weaving MSMEs

H3: Illusion of control has a positive impact on the overconfidence of the Troso ikat weaving MSME actors.

H4: Overconfidence has a positive impact on the investment bias at the Troso ikat weaving MSMEs.

H5: Overconfidence mediates the impact of illusion of control on investment bias at the Troso ikat weaving MSMEs.

H6: Self-control weakens the impact of overconfidence on investment bias at the Troso ikat weaving MSMEs.

. There was a total population of 440 Troso ikat weaving MSME actors in Jepara Regency, however only 200 of them were employed as the research sample based on the research objectives and analysis procedures implemented. A field survey method was implemented to collect the data. The respondents must complete a questionnaire, consisting of their demographic profile and a set of questionnaire items about the variables studied measured using a 7-point Likert Scale.

The negative framing was measured by the instruments of investment decisions, optimal use of production equipment, efficient labor, and sales during a downturn. Further, the illusion of control was measured by the respondents' feeling whether they could control the requirement for production resources, quality, efficiency, sales, and products' selling price. Next, the overconfidence was measured by whether the respondents believed they would produce higher profits, better investment decisions, better investment understanding than other managers, better investment management, and faster business development. Furthermore, the self-control was measured by whether the respondents were being cautious in taking actions, assessing the risks in detail, considering minor risks with minimum results, taking significant risks for the desired results, and addressing the mistakes. Meanwhile, the investment bias was measured by whether the respondents had excess manufacturing equipment, improper tools, underutilized weaving machines, inadequate utilization of production buildings, ineffective employee training, and ineffective worker education.

The following Table 1 presents the profile of respondents participated in this study. It can be seen that most of the Troso ikat weaving MSME actors were male (81%), between 35-40 years old (27%), only senior high school graduates (32%), and had run the business for more than 10 years (45%)

Table 1. Respondent Profile

Characteristic	Frequency (N = 200)	Percentage (%)
Gender		
Male	162	81
Female	38	19
Age		
23 – 28 years old	12	6
29 – 34 years old	32	16
35 – 40 years old	54	27
41 – 46 years old	34	17
47 – 52 years old	30	15
53 – 58 years old	22	11
59 – 64 years old	10	5
65 – 70 years old	6	3
Latest Education		
Elementary school	38	19
Junior high school	46	23
Senior high school	64	32
Diploma and/or Bachelor degree	52	26
Length of Business Operation		
3 – 5 years	38	19
6 – 10 years	72	36
> 10 years	90	45

Source: own elaboration based on the survey results

4. RESULTS AND DISCUSSION

The following Table 2 illustrates that the mean value ranges from 4.28 to 5.77. The negative framing variable is the only variable with a moderate mean value (4.28), while the rest have a high mean value. This finding implies that the Troso ikat weaving MSME actors had the potential of experiencing the investment bias, and had the illusion of control, overconfidence, and self-control.

Table 2. Descriptive Statistics

	BIV	FRN	ICL	OVC	SCL
Mean	5.23	4.28	5.75	5.22	5.77
Std. Dev.	1.72	1.96	1.461	1.660	1.241
	3	5			

Note : (1) BIV: investment bias; FRN: framing; ICL: illusion of control; OVC: overconfidence; SCL: self-control.; (2) Category: 1.00 – 3.00 = low; 3.01 – 5.00 = moderate; ≥ 5.01 = high

This study conducted validity and reliability tests to examine the quality of field research data. There were two validity tests conducted, including convergent validity (measured by the average variance extraction (AVE) value) and discriminant validity (measured by the composite reliability (CR) value). The following Table 3 shows the results of convergent and discriminant validity tests. All items have an AVE value of higher than 0.6, which met the minimum threshold for the convergent validity. Similarly, the results of discriminant validity test indicate that the correlation value for all constructs exceeds the AVE value required.

Table 3. Results of Validity Test

	AVE	CR				
		FEB	ICB	OVB	IVD	SCB
FRN	0.707	0.841				
ICL	0.662	-0.149	0.814			
OVD	0.804	-0.366	0.278	0.897		
BIV	0.659	-0.378	0.388	0.482	0.812	
SCL	0.605	-0.098	0.260	0.132	0.312	0.778

Furthermore, Table 4 shows the results of reliability test where the Cronbach's Alpha (CA) values for all constructs exceed the minimum criterion (0.7). As a result, all of the constructs can be considered reliable. Based on the CR value, it can be seen that all constructs exceed the minimum criterion of 0.8.

Table 4. Results of Reliability Test

	CA	CR
FRN	0.861	0.906
ICL	0.874	0.907
OVD	0.939	0.954
BIV	0.897	0.920
SCL	0.837	0.884

Source: own elaboration in Smart PLS

The results of hypothesis testing indicate that all hypotheses can be supported empirically, except H1 and H6. The following Table 5 presents the details as follows:

Table 5. Results of Hypothesis Testing

Hypothesis		Original Sample	Mean	St. Dev.	T-Statistics	P-Value	Conclusion
H ₁ (+)	FRN → BIV	-0.212	-0.203	0.075	2.844	0.005	Not Supported
H ₂ (+)	ICL → BIV	0.219	0.228	0.068	3.204	0.001	Supported
H ₃ (+)	ICL → OVD	0.278	0.298	0.082	3.397	0.001	Supported
H ₄ (+)	OVD → BIV	0.317	0.312	0.080	3.970	0.000	Supported
H ₅ (+)	ICL → OVD → BIV	0.088	0.093	0.036	2.477	0.014	Supported
H ₆ (+)	OVD*SCL → BIV	-0.011	-0.008	0.050	0.225	0.822	Not Supported
R-squared 0.378							
R-adjusted 0.362							

Source: own elaboration in SPSS

It is found that the negative framing has a negative and significant impact on the investment bias ($\beta = -0.212$; $p\text{-value} = 0.005$). Although it is significant because the direction is expected to be positive, H1 cannot be supported empirically. Further, the illusion of control has a positive and significant impact on the investment bias ($\beta = 0.219$; $p\text{-value} = 0.001$), thus H2 can be supported empirically. In addition, the illusion of control has a positive and significant impact on the overconfidence ($\beta = 0.278$; $p\text{-value} = 0.001$), hence H3 can be supported empirically. Additionally, the overconfidence has a positive and significant impact on the investment bias ($\beta = 0.317$; $p\text{-value} = 0.000$), thus H4 can be supported empirically. Furthermore, the overconfidence is able to mediate the impact of illusion of control on the investment bias ($\beta = 0.088$; $p\text{-value} = 0.014$), hence H5 can be supported empirically. Lastly, the self-control fails to moderate the impact of overconfidence on the investment bias ($\beta = -0.011$; $p\text{-value} = 0.822$), thus H6 cannot be supported empirically. Table 5 also shows that an adjusted R-squared of 0.362, indicating that 36.2% of the investment bias could be explained by the framing effect, illusion of control, overconfidence, and self-control biases, while the rest 63.8% was influenced by other variables not included in the study.

The first hypothesis proposes that the negative framing has a significant impact on the investment bias at the Troso ikat weaving MSMEs. However, this study confirms the opposite, where the negative framing does not have an impact on the investment bias. This finding indicates that the Troso ikat weaving MSME actors were not easily affected by the negative framing, and there was a possibility that the respondents as the MSME actors had a lack of knowledge on the framing on the research instruments. This finding contradicts the study by Xiaoying and Wenquan (2015) who stated that as a result of negative framing, people would prefer to make decisions by taking risks. By becoming nolder in accepting high risks, the MSME actors might experience an increase in commitment, resulting in the investment bias.

Moreover, the second hypothesis proposes that the illusion of control has a positive impact on the investment bias at the Troso ikat weaving MSMEs. This study finds that this hypothesis can be supported empirically and indicates that the MSME actors who believed they could affect and control the outcomes of their investment decisions were more likely to experience the investment bias. This finding is consistent with Fellner (2009) and Hsu and Chen (2017), who argued that the illusion of control caused people to be more daring when investing, which could lead to the changes in the investment and an increase in less profitable investment.

Besides, the third hypothesis proposes that the illusion of control has a positive impact on the overconfidence of the Troso ikat weaving MSME actors. This study agrees that this hypothesis can be supported empirically. This finding also indicates that if the MSME actors believed they had the ability to influence and control the process, as well as determined the outcomes, they would become more confident. It is in line with Hsu and Chen (2017) who believed that the illusion of control made them feel optimistic about their ability to manage future circumstances, and Supramono et al. (2017) who believed that the illusion of control was one of the causes of overconfidence.

Additionally, the fourth hypothesis proposes that the overconfidence has a positive impact on the investment bias at the Troso ikat weaving MSMEs. This study proves that this hypothesis can be supported empirically. This finding implies that the overconfident MSME actors believed that they had an above-average sense of knowledge and ability, thus they were more willing to invest excessively in the production equipment. This finding is in line with Ben-David et al. (2007) who discovered that organizations with overconfident managers were more willing to make investments. Additionally, Xiao and Anfeng (2017) discovered that the companies with overconfident managers spent more on the investment. Meanwhile, Gudmundsson and Lechner (2013) underlined that the overconfidence frequently led to the errors in decision making, resulting in affected business survival.

Furthermore, the fifth hypothesis proposes that the overconfidence mediates the impact of illusion of control on investment bias at the Troso ikat weaving MSMEs. This study demonstrates that this hypothesis can be supported empirically. This finding implies that the sense of overconfidence in individuals' abilities and knowledge could improve their perception of having more power to influence and control the outcomes, which might increase the frequency of investment decision-making errors. Similarly, Michael and Wohl (2009) linked the illusion of control to an optimistic attitude and excessive self-confidence. According to Supramono et al. (2017), the illusion of control was one aspect that contributed to many people's overconfidence in their actions.

Finally, the last hypothesis proposes that the self-control moderates the impact of overconfidence on investment bias at the Troso ikat weaving MSMEs. However, this study cannot support this hypothesis empirically. In this study, the self-control has the highest mean value of 5.77 and the smallest variation of 1.24. This finding indicates that the majority of Troso ikat weaving MSME actors believed they had a strong self-control.

5. CONCLUSIONS

This study aims to investigate the impact of behavioral biases, such as negative framing, illusion of control, overconfidence, and self-control, on the investment bias at the Troso ikat weaving MSMEs in Jepara Regency, Central Java. The results of this study conclude that the illusion of control and overconfidence both have a positive impact on the investment bias; overconfidence mediates the impact of illusion of control on the investment bias; negative framing does not have a negative impact on the investment bias; and the self-control weakens the impact of overconfidence on the investment bias. The results of this study are expected to contribute to the literature on the impact of behavioral biases on real-sector investment decisions, which are very similar to those in the finance sector. In fact, this study highlights that the business actors are highly susceptible to the behavioral biases, which stem from both the cognitive bias and emotional bias, resulting to the investment bias. Aside from that, the results of this study suggest the MSME actors to not overestimate and be overconfident in their ability to control the outcomes of investment activities. The MSME actors must reduce the biases by not depending solely on their own knowledge and experience while also being open to listen to other people's feedback and consider learning from other people's successes for investment purposes.

However, this study has three limitations. First, this study finds the negative framing, illusion of control, overconfidence, and self-control could only explain 36.2% of the investment bias. This relatively low number suggests that future study must incorporate other biases, such as confirmation bias, recency bias, and herding bias, all of which are likely to contribute to the investment bias. Second, it is assumed that the respondents could not interpret the questionnaire items well, particularly on the negative framing variable, allowing for inaccurate responses and analysis. Therefore, future researches are suggested to change the questionnaire items for better understanding and more accurate responses and analysis. Third, this study only investigated one particular industry, which was the Troso ikat weaving MSMEs. Thus, the results cannot be generalized for other contexts. Future researches are suggested to investigate a variety of industries.

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