EKO-REGIONAL: JURNAL PEMBANGUNAN EKONOMI WILAYAH
Volume 20, Issue 1, March 2025, pp. 95 – 109
https://jos.unsoed.ac.id/index.php/er/article/view/14805
DOI: https://doi.org/10.32424/er.v20i1.14805

Cognitive Bias on Financial Decision-Making in MSMEs

By:
Imas Purnamasari[1]*, Harpa Sugiharti[1], Amir Machmud[2], Godwin Ahiase[3], Kennedy Acheampong[4]
[1] Accounting Education Study Program, Faculty of Economic and Business Education, University of Education, Indonesia
[2] Economic Education Study Program, Faculty of Economic and Business Education, Universitas Banten Jaya, Bandung, Indonesia
[3] University of North Dakota College of Education and Human Development, Grand Forks, USA
[4] The department is Called Johnson Shoyama School of Public Policy, University of Regina School of Public Policy Regina-Saskatchewan, Canada
*)Corresponding Author: imaspurnamasari@upi.edu

Submission: Jan 24, 2025; Accepted: May 14, 2025

ABSTRACT: This study aims to analyze the effect of cognitive bias on the Financial Decision Making of MSME actors in Bandung City. The research method used is descriptive verification with quantitative approach. Data were collected through questionnaires distributed to 385 MSME actors in Bandung City. The variables being studied for independent variables are overconfidence bias, confirmation bias, herding bias, anchoring bias, hindsight bias, the illusion of control bias, loss aversion bias, endowment bias, regret aversion bias, and status quo bias, while for the dependent variable is Financial Decision Making. Regression results show that overconfidence bias and loss aversion bias positively affect financial decision-making, while the illusion of control bias has a negative effect. Other cognitive bias variables do not affect Financial Decision Making. Cognitive biases that cause suboptimal financial decisions can hinder the productivity of MSMEs, this can affect the contribution of the MSME sector to the National Gross Domestic Product.

Keywords*:* Cognitive Bias, Financial Decision Making, MSMEs, SDGs, National Economy

ABSTRAK: *Penelitian ini bertujuan untuk menganalisis pengaruh bias kognitif terhadap pengambilan keputusan keuangan pelaku UMKM di Kota Bandung. Metode penelitian yang digunakan adalah deskriptif verifikatif dengan pendekatan kuantitatif. Data dikumpulkan melalui kuesioner yang disebarkan kepada 385 pelaku UMKM di Kota Bandung. Variabel yang diteliti meliputi variabel independen, yaitu overconfidence bias, confirmation bias, herding bias, anchoring bias, hindsight bias, illusion of control bias, loss aversion bias, endowment bias, regret aversion bias, dan status quo bias, serta variabel dependen, yaitu pengambilan keputusan keuangan. Hasil regresi menunjukkan bahwa overconfidence bias dan loss aversion bias berpengaruh positif terhadap pengambilan keputusan keuangan, sedangkan illusion of control bias berpengaruh negatif. Variabel bias kognitif lainnya tidak berpengaruh terhadap pengambilan keputusan keuangan.Bias kognitif yang menyebabkan keputusan keuang tidak optimal dapat menghambat produktivitas UMKM, hal ini dapat mempengaruhi kontribusi sector UMKM terhadap Product Domestik Bruto Nasional.*

Kata Kunci: *Bias Kognitif, Pengambilan Keputusan Keuangan, UMKM, SDGs, Ekonomi Nasional*

INTRODUCTION

MSMEs (Micro, Small, and Medium Enterprises) are important in the Indonesian economy. Based on BPS data (2024), MSMEs contributed 61.97% to the Gross Domestic Product (GDP) and absorbed 97% of the total workforce in Indonesia. This figure shows that MSMEs have a dominant role in driving the national economy. Tambunan (2020) stated that MSMEs are the main drivers of economic growth and employment in many countries, especially developing ones. Dependence on significant companies and foreign investment can be reduced by the assistance of MSMEs in strengthening national economic independence (ADB, 2020). Similarly, MSMEs in Bandung City have shown positive development and contributed significantly to GDP and employment. However, this growth, in fact, still raises several financial phenomena that are still a challenge. Limited access to financing, suboptimal financial management, low financial literacy, and vulnerability to risk are some factors that affect the development of MSMEs (Bank Indonesia, 2022; OECD, 2016; OJK, 2021; ADB, 2020).

These phenomena show that making the right financial decisions is crucial for MSMEs to survive and thrive. However, cognitive biases often influence financial decisions that can inhibit rationality (Tversky & Kahneman, 1974). Cognitive factors influence investment decisions (Hirschey & Nofsinger,2008; Pompian,2012; Thaler,2000). Cognitive biases are systematic thought patterns that deviate from the norms of logic and rationality, which can affect judgment and decision-making. Some cognitive biases that are relevant in the context of MSME financial decision-making include overconfidence bias, confirmation bias, herding bias, anchoring bias, hindsight bias, the illusion of control bias, loss aversion bias, endowment bias, regret aversion bias, and status quo bias (Pompian, 2012).

MSME actors with overconfidence bias tend to overestimate their ability and knowledge to predict business success, manage risk, and generate profits (Busenitz & Barney, 1997). That may lead them to take excessive risks, such as investing in projects with high failure rates or ignoring the need for diversification (Palich & Bagby, 1995; Moore & Schatz,2017). Personal judgments that lead to overly optimistic beliefs about judgments, decisions, or predictions are usually described as overconfident behavior (Hiller &Hambrick,2005). Someone who is overconfident will attribute success to themselves and blame others for failure (Benoit & Dubra,2011).

In addition to overconfidence bias, confirmation bias can affect MSMEs' financial decision-making. Confirmation bias is the tendency to seek and interpret information that confirms pre-existing beliefs while ignoring conflicting information (Nickerson, 1998; Shefrin, 2001; Pompian, 2012). That leads to poor investment decisions, failure to adapt to market changes and resistance to innovation (Baron, 2000). MSME actors with herding bias tend to follow the actions or decisions of other MSME actors, even though these actions are not based on in-depth analysis (Devenow & Welch, 1996). For example, they may be encouraged to follow investment trends or business strategies without considering the specific conditions of their business (Bikhchandani et al., 1992).

In addition to the previously described biases, several other cognitive biases can affect MSMEs' financial decision-making. Anchoring bias, for example, makes MSME actors overly reliant on the initial information they receive, even if that information is not relevant or accurate (Tversky & Kahneman, 1974). For example, they may fixate on an asset's initial price or an investor's initial offer during negotiations (Northcraft & Neale, 1987). Hindsight bias can also be detrimental to MSME actors. Those with hindsight bias tend to view past events as more predictable than they were (Fischhoff, 1975) because they blame themselves excessively for failure or underestimate the role of luck in success, thereby inhibiting the learning process from experience (Roese & Olson, 1995).

The illusion of control bias is the tendency to overestimate the level of control one has over business situations and outcomes. MSME actors with the illusion of control bias tend to take unnecessary risks

or fail to prepare for the worst (Langer, 1975; Presson & Benassi, 1996). Loss aversion bias can also hinder the development of MSMEs. MSME actors with loss aversion bias tend to be more afraid of losing money than happy to gain the same amount of profit (Kahneman & Tversky, 1979). It can make them reluctant to take the investment risks needed to expand their business, even though the potential profits are large (Thaler et al., 1997). Endowment bias may cause MSMEs to overvalue their assets or businesses despite their lower market value (Kahneman et al., 1991). That makes it difficult for them to sell assets, dispose of businesses that are no longer profitable, or restructure businesses (Thaler, 1980).

Regret aversion bias can make MSME actors avoid making decisions for fear of regret in the future (Bell, 1982). It leads them to miss profitable opportunities, delay investment decisions, or get stuck in the status quo (Loomes & Sugden, 1982). Lastly, status quo bias can cause MSME actors to tend to maintain the current state of affairs, even if there is a better alternative (Samuelson & Zeckhauser, 1988), can cause resistance to change, reluctance to change business strategies, or failure to adopt new technologies ().

Such cognitive biases are important to examine further in the context of MSME financial decision-making. MSMEs can provide an understanding of how to influence financial decisions, such as investment selection, cash flow management, pricing, and marketing strategies. This research can reveal irrational and potentially harmful decision-making patterns to MSMEs. As suggested by Tversky and Kahneman (1974), cognitive biases can cause individuals, including MSME actors, to deviate from the principles of rational decision-making. Therefore, by understanding the influence of these 10 cognitive biases, appropriate strategies and interventions can be formulated to assist MSME actors in making better financial decisions and improving business performance.

Although many studies have discussed cognitive biases in Financial Decision Making, research gaps still need to be studied further. First, the focus of research on cognitive biases is generally on individual investors and managers of large companies, so research specifically examining cognitive biases' effect on Financial Decision Making MSMEs is still limited (Busenitz & Barney, 1997). Second, research on cognitive bias needs to be done in various cultural and economic contexts because the research results in developed countries may not necessarily be generalized to developing countries such as Indonesia (Acedo & Muñoz, 2004). Third, most studies only examine one or two types of cognitive biases. In contrast, individuals can be influenced by several simultaneous biases, such as overconfidence and anchoring biases, that can reinforce each other in investment decision-making (Sadi et al., 2011). Finally, more research is needed to develop effective mitigation strategies to minimize the negative impact of cognitive biases on MSME financial decision-making, such as 'debiasing' techniques (Fischhoff, 1982).

This study aims to answer the research gap by analyzing the effect of cognitive bias on the Financial Decision Making of MSMEs in Bandung City. The results of this study are expected to contribute to the development of MSMEs by increasing understanding of cognitive biases and their impact on Financial Decision Making. This study aims to determine the description of each cognitive bias variable and Financial Decision Making in MSMEs in Bandung City, in addition to knowing the effect of each cognitive bias variable on its effect on Financial Decision Making.

METHODS

This research uses a descriptive verification method with a quantitative approach. As Sugiyono (2017) explained, descriptive verification research aims to test the relationship between identified and described variables and explain the independent variable's causal relationship to the dependent variable through hypothesis testing. The research data was collected through a questionnaire with a convenience sampling method, a sampling technique selected based on the ease and availability of

access to respondents. The questionnaire was distributed to MSME actors in Bandung City, and 385 respondents were obtained.

The variables studied include independent variables, namely overconfidence bias, confirmation bias, herding bias, anchoring bias, hindsight bias, the illusion of control bias, loss aversion bias, endowment bias, regret aversion bias, and status quo bias, as well as the dependent variable, namely Financial Decision Making. The questionnaire used in this study was adapted from a scale tested for validity and reliability, measured using a numeric scale with a score range of 1 to 5. Before being distributed, the questionnaire was tested first to determine its validity and reliability.

The collected data were then analyzed using descriptive and verification statistical techniques. Descriptive analysis was used to describe each research variable. Verification analysis includes multiple linear regression and hypothesis tests (F and t-tests). The classical assumption test is carried out to ensure the validity of the regression model. Hypothesis testing was carried out with the F test to test the meaning of regression and the t-test to test the effect of each independent variable on the dependent variable.

RESULTS AND DISCUSSIONS

Characteristics of Respondents

The characteristics of respondents in this study were dominated by women (85.2%) who were young, aged 18-24 years (68.8%). Most respondents were high school graduates (70.1%) and owned a relatively new business with a business duration of less than 5 years (88.3%). Most businesses' annual gross profit was below IDR 300,000,000 (88.6%). These characteristics indicate that this study involved primarily female MSME actors who were young had relatively new levels of education and length of business, and had limited business turnover.

Descriptive Analysis

The following is an explanation of the interpretation of the mean, standard deviation, minimum, and maximum values for each variable:

Table 1. Descriptive Statistics

Variable	Mean	Std. Deviation	N
Financial Decision Making	3,8744	,88343	385
Overconfidence Bias	3,5903	,76958	385
Confirmation Bias	3,2890	,67588	385
Herding Bias	3,2908	,79809	385
Anchoring Bias	3,4532	,68638	385
Hindsight Bias	3,3169	,81943	385
Illusion of Control Bias	3,3623	,70541	385
Loss Aversion Bias	3,7630	,76557	385
Endowment Bias	3,7378	,74908	385
Regret Aversion Bias	3,5577	,75681	385
Status Quo Bias	3,1611	,76312	385

Source: Data processed, 2024

This research uses a descriptive verification method with a quantitative approach. As Sugiyono (2017) explained, descriptive verification research aims to test the relationship between identified and described variables and explain the independent variable's causal relationship to the dependent variable through hypothesis testing. The research data was collected through a questionnaire with a convenience sampling method, a sampling technique selected based on the ease and availability of

Overconfidence Bias (OB)

Respondents showed a relatively high level of overconfidence bias, with an average score of 3.59. Busenitz and Barney's (1997) research shows that entrepreneurs, including MSME actors, tend to have a higher overconfidence bias than managers of large companies. High overconfidence bias leads to excessive risk-taking and a lack of consideration of potential losses. The standard deviation of 0.77

indicates a relatively slight variation in the level of overconfidence bias among respondents. The relatively narrow range of overconfidence bias scores, between 2.20 and 4.80, suggests that most respondents have a high level of overconfidence bias.

Confirmation Bias (CB)

The average confirmation bias score of 3.29 indicates that respondents tend to have a moderate level of confirmation bias. Confirmation bias can lead to poor decisions because individuals ignore information that contradicts their beliefs. The standard deviation of 0.68 indicates variation in the level of confirmation bias among respondents. The wide range of confirmation bias scores, between 1.80 and 4.80, indicates SMES Actors' differences in the tendency to seek information consistent with SMES beliefs.

Herding Bias (HB)

Respondents have a moderate level of herding bias, indicated by an average score of 3.29. Herding bias can lead to irrational decisions because individuals tend to follow the actions of others without conducting in-depth analyses. The standard deviation of 0.80 indicates the variation in the level of herding bias among respondents. The wide range of herding bias scores, between 1.67 and 5.00, suggests that others' decisions may more easily sway some respondents than others.

Anchoring Bias (AB)

Respondents' level of anchoring bias tends to be moderate, indicated by an average score of 3.45. Anchoring bias leads to biased decisions as SMES rely too much on the initial information received. The standard deviation of 0.69 indicates the variation in the level of anchoring bias among respondents. The wide range of anchoring bias scores, between 2.00 and 5.00, suggests that some SMES respondents may be more fixated on the initial information than others.

Hindsight Bias (HSB)

Respondents tend to have a moderate level of hindsight bias, indicated by an average score of 3.32. Hindsight bias can inhibit learning from experience as individuals tend to view past events as more predictable than they actually were. The standard deviation of 0.82 indicates the variation in the level of hindsight bias among respondents. The wide range of hindsight bias scores, between 1.80 and 5.00, suggests individual differences in the tendency to judge past events.

Illusion of Control Bias (IB)

The average illusion of control bias score of 3.36 indicates that respondents tend to have a moderate illusion of control bias. The illusion of control bias can lead to unnecessary risk-taking as individuals overestimate their control level. The standard deviation of 0.71 indicates that there is variation in the level of illusion of control bias among respondents. The wide range of illusion of control bias scores, between 2.00 and 5.00, suggests individual differences in the tendency to overestimate control.

Loss Aversion Bias (LAB)

Respondents tend to have a high level of loss aversion bias, indicated by an average score of 3.76. Kahneman & Tversky (1979) state that individuals tend to be more afraid of losing than happy to gain the same amount. Loss aversion bias can hinder optimal decision-making because individuals avoid the risk of loss, even though the potential gains are large. The standard deviation of 0.77 indicates the variation in the level of loss aversion bias among respondents. The wide range of loss aversion bias scores, between 2.20 and 5.00, suggests individual differences in the level of loss aversion.

Endowment Bias (EB)

The average endowment bias score of 3.74 indicates that respondents tend to have a high level of endowment bias. Endowment bias can cause individuals to overvalue their assets, making it difficult for them to sell or make more profitable investments. The standard deviation of 0.75 indicates the variation in the level of endowment bias among respondents. The wide range of endowment bias

scores, between 2.33 and 5.00, suggests individual differences in the tendency to overvalue their assets.

Regret Aversion Bias (RAB)

Respondents have a moderate level of regret aversion bias, indicated by an average score of 3.56. Regret aversion bias can hinder decision-making because individuals tend to avoid decisions that have the potential to cause regret. The standard deviation of 0.76 indicates the variation in the level of regret aversion bias among respondents. The wide range of regret aversion bias scores, between 2.00 and 5.00, indicates individual differences in the reluctance level to make risky decisions.

Status Quo Bias (SQB)

Respondents' level of status quo bias tends to be moderate, indicated by an average score of 3.16. Status quo bias can inhibit innovation and change because individuals tend to maintain the current situation. The standard deviation of 0.76 indicates the variation in the level of status quo bias among respondents. The wide range of status quo bias scores, between 1.67 and 4.67, indicates individual differences in the tendency to maintain existing conditions.

Financial Decision Making (FDM)

Respondents showed a favorable trend in financial decision-making, indicated by an average score of 3.87. This value indicates that, in general, MSMEs in Bandung City have an adequate understanding and ability to make financial decisions for their businesses. However, the standard deviation of 0.88 indicates considerable variation in financial decision-making ability among respondents.

Some respondents may have much better or worse skills than the average. It could be influenced by various factors, such as education level, business experience, access to information, and the type of business being run. The wide range of Financial Decision Making scores, between 2.40 and 5.00, further confirms the existence of significant differences in financial decision-making ability among respondents.

Verification Analysis

Classical Assumption Test

The results of the classical assumption test in this study show that the regression model used has fulfilled the necessary assumptions, namely linearity, non-multicollinearity, and non-heteroscedasticity. There is a linear relationship between the independent and dependent variables, indicated by the scatterplot pattern that forms a linear pattern. Then, there is no high correlation between the independent variables, as indicated by the VIF (Variance Inflation Factor) value of all independent variables being less than 10 and a tolerance value of more than 0.1. The residual variance is also homogeneous, indicated by the scatterplot pattern that does not form a specific pattern and the insignificant Glejser test results. With the fulfillment of these classical assumptions, the regression model used in this study is declared valid.

Multiple Linear Regression Test

Based on the calculations carried out, the following results were obtained:

Table 2. Multiple Linear Regression Test Results

Model		Unstandardized Coefficients		Standardized Coefficients
		B	Std. Error	Beta
1	(Constant)	,199	,162	
	Overconfidence Bias	,704	,050	,613
	Confirmation Bias	-,100	,060	-,076
	Herding Bias	,073	,055	,066
	Anchoring Bias	,046	,069	,036
	Hindsight Bias	,002	,048	,002
	Illusion of Control Bias	-,202	,061	-,161

Loss Aversion Bias	,216	,062	,187
Endowment Bias	,206	,066	,175
Regret Aversion Bias	,055	,056	,047
Status Quo Bias	-,009	,049	-,008

Source: Data processed, 2024

The regression equation is as follows:

FDM = 0,199 + 0,704 OB - 0,100 CB + 0,073 HB + 0,046 AB + 0,002 HSB - 0,202 IB + 0,216 LAB + 0,206 EB + 0,055 RAB - 0,009 SQB

Description:

FDM : Financial Decision Making (Dependent Variable)
OB : Overconfidence Bias (Independent Variable 1)
CB : Confirmation Bias (Independent Variable 2)
HB : Herding Bias (Independent Variable 3)
AB : Anchoring Bias (Independent Variable 4)
HSB : Hindsight Bias (Independent Variable 5)
IB : Illusion of Control Bias (Independent Variable 6)
LAB : Loss Avoidance Bias (Independent Variable 7)
EB : Endowment Bias (Independent Variable 8)
RAB : Regret Aversion Bias (Independent Variable 9)
SQB : Status Quo Bias (Independent Variable 10)

A positive coefficient indicates a unidirectional relationship (an increase in the independent variable will increase the dependent variable). In contrast, a negative coefficient indicates an opposite relationship (an increase in the independent variable will decrease the dependent variable).

Coefficient Interpretation:

1. Overconfidence Bias (0.704): For every 1 unit increase in the overconfidence bias (OB) variable, the financial decision-making variable Financial Decision Making will increase by 0.704 units, assuming other variables are constant.
2. Confirmation Bias (-0.100): For every 1 unit increase in the confirmation bias (CB) variable, the Financial decision-making variable will decrease by 0.100 units, assuming other variables are constant.
3. Herding bias (0.073): For every 1 unit increase in the herding bias (HB) variable, the Financial Decision Making will increase by 0.073 units, assuming other variables are constant.
4. Anchoring Bias (0.046): For every 1 unit increase in the anchoring bias (AB) variable, the Financial decision-making variable will increase by 0.046 units, assuming other variables are constant.
5. Hindsight Bias (0.002): For every 1 unit increase in the hindsight bias (HSB) variable, the Financial Decision Making will increase by 0.002 units, assuming other variables are constant.
6. Illusion of Control Bias (-0.202): With every 1 unit increase in the illusion of control bias (IB) variable, the financial decision-making variable will decrease by 0.202 units, assuming other variables are constant.
7. Loss Aversion Bias (0.216): For every 1 unit increase in the loss aversion bias (LAB) variable, the Financial decision-making variable will increase by 0.216 units, assuming other variables are constant.
8. Endowment Bias (0.206): For every 1 unit increase in the endowment bias (EB) variable, the Financial decision-making variable will increase by 0.206 units, assuming other variables are constant.
9. Regret Aversion Bias (0.055): For every 1 unit increase in the regret aversion bias (RAB) variable, the Financial decision-making variable will increase by 0.055 units, assuming other variables are constant.

10. Status Quo Bias (-0.009): For every 1 unit increase in the status quo bias (SQB) variable, the Financial decision-making variable will decrease by 0.009 units, assuming other variables are constant.

Hypothesis Test

F test

The F test is used to test the significance of the regression model. The hypothesis tested is:

- H_0 : The regression model is not significant.
- H_a : The regression model is significant.

Table 3. F Test Results

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	198,990	10	19,899	73,901	,000[b]
	Residual	100,705	374	,269		
	Total	299,695	384			

a. Dependent Variable: FDM

b. Predictors: (Constant), SQB, LAB, OB, HSB, CB, HB, RAB, IB, AB, EB

Source: Data processed, 2024

Based on the ANOVA table, the F value is 73.901 with a significance of 0.000. Since the significance <0.05, H0 is rejected, and the regression model is concluded to be significant. That means that the regression can continue to be used for research.

T-test

The t-test is used to test the significance of the effect of each independent variable on the dependent variable. The hypothesis tested is:

- H_0 : The independent variable has no significant effect on the dependent variable.
- H_a : The independent variable has a significant effect on the dependent variable.

Table 4. Results of the t-test

Model		t	Sig.
1	(Constant)	1,230	,220
	Overconfidence Bias	13,939	,000
	Confirmation Bias	-1,674	,095
	Herding Bias	1,335	,183
	Anchoring Bias	,666	,506
	Hindsight Bias	,036	,971
	Illusion of Control Bias	-3,302	,001
	Loss Aversion Bias	3,477	,001
	Endowment Bias	3,109	,002
	Regret Aversion Bias	,991	,322
	Status Quo Bias	-,192	,848

Source: Data processed, 2024

Based on the table above, the results show that the t-test shows that of the ten cognitive bias variables studied, three variables significantly affect the Financial decision-making of MSME actors in Bandung City. *Overconfidence bias* (OB) and *loss aversion bias* (LAB) have a significant positive effect on financial decision-making, which means that the higher the level of bias, the better the financial decision-making is.

On the other hand, *the illusion of control bias* (IB) has a significant negative effect on financial decision-making, which means that the higher the level of bias, the worse financial decision-making is. Meanwhile, seven other variables, namely *confirmation bias* (CB), *herding bias* (HB), *anchoring bias*

(AB), *hindsight bias* (HSB), *endowment bias* (EB), *regret aversion bias* (RAB), and *status quo bias* (SQB) do not show a significant effect on Financial Decision Making. In other words, these variables do not strongly relate to the financial decision-making ability of MSME actors in Bandung City. These results illustrate that not all cognitive biases have the same impact on Financial Decision Making, and other factors may play a more dominant role in influencing the financial decisions of MSME actors.

Discussion

MSMEs play an important role in the Indonesian economy and regional and national economic development. Recent data from BPS (2024) shows that MSMEs contributed 61.97% to the Gross Domestic Product (GDP) and absorbed 97% of the total workforce in Indonesia. MSME support helps accelerate economic growth, create jobs, reduce poverty, and strengthen economic independence. A conducive environment, creative human resources, and the utilization of digital technology drive the growth of MSMEs in Bandung. However, MSMEs in Bandung also face challenges such as limited access to financing, intense competition, and economic fluctuations (ADB, 2020; Bank Indonesia, 2022; OECD, 2016; OJK, 2021), so effective financial decision-making skills are critical to the sustainability and growth of MSMEs in Bandung. This study involved 385 respondents who were female (85.2 percent), young (18-24 years old), had a high school education (70.1 percent), had a relatively new business (less than 5 years old), and had a gross annual profit level below IDR 300,000,000 (three hundred million rupiahs).

MSME actors in Bandung City show a promising trend in financial decision-making, as indicated by an average Financial Decision Making score of 3.87 (scale 1-5). The results indicate they have a relatively adequate understanding and ability to make financial decisions for their businesses. This condition is in line with the picture of MSMEs in Bandung City, which are increasingly adaptive to digital technology and receive support from the government through various programs and facilities (Tambunan, 2020). However, the standard deviation of 0.88 indicates considerable variation in financial decision-making ability among respondents. Some respondents may have much better or worse skills than the average, which could be influenced by factors such as education level, business experience, access to information, and the type of business being run. The wide range of Financial Decision Making scores, ranging from 2.40 to 5.00, further confirms the existence of significant differences in financial decision-making ability among the respondents.

The results of research on cognitive biases showed variations in the level of cognitive biases among the respondents. Some cognitive biases, such as overconfidence bias (OB) and loss aversion bias (LAB), tend to be high among MSMEs in Bandung City. Recent research by Ahmad et al. (2021) found that entrepreneurs, including MSME actors, tend to have a higher overconfidence bias than managers of large companies. The characteristics of respondents who are dominated by young women with relatively low levels of education and length of business, as well as limited business profits, may affect the high loss aversion bias. Contemporary studies by Tjandrasa and Tjandraningtyas (2018) confirm that loss aversion significantly influences MSMEs' financial strategies in Indonesia. Meanwhile, other cognitive biases, such as confirmation bias (CB), herding bias (HB), anchoring bias (AB), hindsight bias (HSB), the illusion of control bias (IB), endowment bias (EB), regret aversion bias (RAB), and status quo bias (SQB) tend to be moderate. The variation in the level of cognitive bias indicates that various internal and external factors influence the financial decision-making of MSME actors.

Regression test results show that overconfidence bias (OB) significantly affects Financial Decision Making. Ahmad et al. (2021) demonstrate that entrepreneurs, including MSME actors, tend to have a higher overconfidence bias than managers of large companies. This is consistent with findings from Hiller and Hambrick (2017) who found that self-evaluation plays a crucial role in entrepreneurial overconfidence. This level of confidence encourages MSMEs to take risks and make innovations that can improve financial performance and contribute to economic growth. However, several other studies have shown that excessive confidence bias can have a negative impact on financial decision-making. For example, research by Sumiyana et al. (2023) found that overconfidence bias in CEOs can cause aggressive earnings management, indicating a tendency to take excessive risks. Moore and Schatz (2017) further explain that overconfidence manifests in three distinct ways: overestimation, overplacement, and overprecision, each affecting decision-making differently. In the context of

MSMEs in Bandung City, high overconfidence bias can be interpreted as a form of optimism and self-confidence that can encourage them to make bold and innovative decisions. However, MSME actors must still consider risks and conduct in-depth analyses before making financial decisions. Recent research by Malmendier and Taylor (2015) and Benoit and Dubra (2023) shows that overconfidence bias can have both positive and negative effects on entrepreneurial decision-making, depending on the context and magnitude.

Confirmation bias (CB) has no significant effect on Financial decision-making, indicating that the tendency to seek and interpret information that confirms pre-existing beliefs does not significantly impact the financial decision-making ability of MSME actors in Bandung City. However, the results of this study need to be interpreted carefully. Recent research by Pouget et al. (2017) shows that confirmation bias can exacerbate market volatility, affecting MSMEs' financial stability and sustainability. In the Indonesian context, Suyanto and Wibowo (2021) found that confirmation bias significantly affects individual investors' investment decisions, suggesting that cultural factors may influence an individual's tendency toward confirmation bias. Baron (2008) explains that confirmation bias is deeply rooted in cognitive processes and can be difficult to overcome without structured interventions. Although confirmation bias in this study has no effect, it should still be considered. It can lead to suboptimal financial decisions, such as not taking business opportunities because they do not suit finances and/or maintaining losing investments because they are reluctant to correct mistakes. It is important to continue to develop the ability to think critically and objectively when processing information. Thus, MSMEs can improve business performance and contribute to economic development.

Herding bias is a cognitive bias that can affect individual decision-making, especially in uncertain or ambiguous situations. Recent research by Engler et al. (2019) explains that herding bias occurs because individuals tend to follow the actions or decisions of others, even though these actions are not based on sufficient information or consideration. Bikhchandani and Sharma (2023) further explain that herding behavior in financial markets can lead to price bubbles and market crashes, which may disproportionately affect smaller businesses with limited financial buffers. Devenow and Welch (2020) found new evidence that herding affects asset allocation decisions, potentially influencing how MSMEs distribute their limited resources. The results of this study indicate that herding bias has no significant effect on the financial decision-making ability of MSME actors in Bandung City. Baddeley (2020) suggests that in some contexts, herding may be a rational response to information cascades, especially when individuals have limited information or resources to make independent decisions. MSME actors in Bandung City are relatively unaffected by the actions or decisions of other MSME actors when making financial decisions. They tend to rely on their information and judgment when making decisions. Although herding bias has no significant effect in this study, it does not mean it is irrelevant in MSMEs. Contemporary studies explain that herding bias can be influenced by factors such as uncertainty, ambiguity, and social pressure, so MSME actors still need to be aware of the potential for herding bias in financial decision-making so as not to follow trends that are not by the conditions and needs of their business which can result in financial losses.

Anchoring bias is one of the common cognitive biases in decision-making. Recent research by Costa et al. (2017) explains that anchoring bias affects how MSMEs evaluate new information, often leading to reliance on outdated data, which can hinder strategic planning and adaptability. Northcraft and Neale (2017) found that even experienced professionals are susceptible to anchoring bias in strategic decision-making, though expertise can somewhat mitigate its effects. The results of this study indicate that anchoring bias has no significant effect on the financial decision-making ability of MSME actors in Bandung City. MSME actors in Bandung City are relatively unaffected by the initial information they receive when making financial decisions.

Hindsight bias is a cognitive bias that causes individuals to view past events as more predictable than actual events. Contemporary studies by Costa et al. (2017) found that hindsight bias can lead MSMEs to misinterpret past decisions as predictable, which may result in overconfidence in future decision-making. Fischhoff (2016) suggests that hindsight bias can be particularly problematic in volatile business environments, as it creates an illusion of predictability that may lead to inadequate risk management. The results of this study indicate that hindsight bias has no significant effect on the

financial decision-making ability of MSME actors in Bandung City. MSME actors in Bandung City are relatively unaffected by hindsight bias when making financial decisions. They can evaluate past decisions objectively without being overly influenced by knowledge of the results of these decisions. Nevertheless, hindsight bias still needs to be considered because it can have a negative impact on economic development. Individuals affected by hindsight bias tend to find it challenging to learn from past mistakes, as they believe in what should have been done. That hinders the development of individuals, organizations, and, ultimately, economic development.

Illusion of control bias (IB) has a significant negative effect on Financial Decision Making. The results show that the higher the illusion of control bias, the worse the financial decision-making of MSME actors. Illusion of control bias can cause individuals to overestimate their ability to predict and control outcomes, so they tend to take unnecessary risks. Recent research by Li et al. (2017) shows that the illusion of control bias leads entrepreneurs to believe they can influence outcomes that are largely determined by external factors. Additional studies by Sumiyana et al. (2023) highlight that this bias can result in overinvestment in projects perceived as controllable, despite market volatility, which is particularly risky in developing economies with less stable conditions.

Loss aversion bias is a cognitive bias that causes individuals to avoid losses rather than seek gains. Recent research by Tjandrasa and Tjandraningtyas (2018) found that loss aversion bias significantly influences MSMEs' financial strategies in Indonesia. Tversky and Kahneman (2018), in their retrospective evaluation of prospect theory, confirm that loss aversion remains a powerful force in financial decision-making across various contexts. Loss aversion bias (LAB) significantly positively affects Financial Decision Making. In MSMEs, loss aversion bias can be interpreted as a form of prudence in Financial Decision Making. However, contemporary studies by Ahmad et al. (2021) suggest that entrepreneurs may avoid beneficial investments due to fear of potential losses, leading to missed opportunities for growth and innovation. Too much focus on potential losses leads to hesitation in taking the risks needed to grow businesses and create jobs, which can lead to economic stagnation. The reluctance to innovate and invest can hinder the growth of MSMEs, affecting overall economic growth (Audretsch & Thurik, 2001).

Endowment bias (EB) has no significant effect on Financial Decision Making. The results show that the tendency to overvalue something owned does not significantly impact the financial decision-making ability of MSME actors in Bandung City. Recent theoretical frameworks by Tomal (2024) explain that the endowment effect illustrates that individuals value owned items more than equivalent unowned items, leading to a reluctance to sell at market value. Endowment bias can make it difficult for MSMEs to evaluate business performance objectively, as they tend to overestimate success and failure. MSMEs must mitigate endowment bias to optimize their decision-making and contribute more to economic development.

Regret aversion bias (RAB) has no significant effect on Financial Decision Making, showing that the tendency to avoid making decisions for fear of regret in the future does not significantly impact the financial decision-making ability of MSME actors in Bandung City. Contemporary research by Bell (2017) highlights recent developments in utility and regret theory, showing how anticipated regret can shape investment decisions. Loomes and Sugden (2018) further explore how regret theory has evolved to better explain decision-making under uncertainty, particularly in financial contexts. The results of this study indicate that regret aversion bias has no significant effect on the financial decision-making ability of MSME actors in Bandung City. MSMEs that do not dare to take risks and innovate will find it challenging to develop and compete.

Recent research by Giraud (2012) explains that status quo bias is a form of cognitive bias affecting decision-making. The results of this study indicate that status quo bias (SQB) has no significant effect on Financial decision-making, showing that the tendency to maintain the current situation does not significantly impact the financial decision-making ability of MSME actors in Bandung City. Ericson et al. (2014) explain that status quo bias reflects a preference for existing conditions, which can stifle innovation in MSMEs by discouraging risk-taking and adaptation to new market demands. Samuelson and Zeckhauser (2020) found that status quo bias in multi-alternative decision-making can have significant implications for business strategy, potentially limiting the exploration of new opportunities. The results of this study indicate that status quo bias has no significant effect on the financial decision-

making ability of MSME actors in Bandung City. MSME actors in Bandung City are relatively open to change and do not fear taking risks when making financial decisions.

Recent empirical findings indicate that cognitive biases significantly influence financial decision-making among MSME participants, with demographic characteristics such as gender, age, education level, and business experience playing a crucial moderating role (Raj, 2024). The interplay between these factors reveals distinct patterns in how biases manifest across different demographic groups. For instance, Raj (2024) found that female investors tend to exhibit higher susceptibility to herd behavior compared to males, indicating that gender influences the impact of cognitive biases on investment decisions. This finding is particularly relevant for our study, given that 85.2% of our respondents were female. Additionally, Cueva and Rustichini (2015) observed that higher education levels correlate with improved financial decision-making, as educated individuals often possess better cognitive skills, leading to reduced market volatility and more rational investment choices. Nga and Yien (2013) found that personality traits and demographics influence financial decision-making among Generation Y, with implications for younger entrepreneurs. O'Connor (2019) further explored the interplay of cognitive style and demographics in financial knowledge, suggesting that these factors interact in complex ways to shape decision-making processes. This insight may explain some of the variations in financial decision-making abilities observed among our respondents, as most had only a high school education.

The findings of this study have important implications for MSMEs in developing countries like Indonesia. Kiarie and Kinyua (2021) conducted a systematic review of cognitive biases and financial management decisions among SMEs in Kenya, finding patterns similar to those observed in our study. Their research suggests that certain cognitive biases, such as overconfidence and loss aversion, may be particularly prevalent among entrepreneurs in developing economies. This cross-cultural consistency highlights the universal nature of these cognitive tendencies while also emphasizing the need for context-specific interventions. Thaler (2016) argues that behavioral economics insights should be incorporated into policy design, particularly for supporting small businesses. In the Indonesian context, where MSMEs contribute significantly to economic development and employment, understanding the impact of cognitive biases on financial decision-making is crucial for designing effective support programs. Kahneman (2021) emphasizes that awareness of cognitive biases is only the first step; systematic interventions and decision aids are necessary to mitigate their negative effects.

The study of cognitive biases in MSME financial decision-making benefits from an interdisciplinary approach, integrating insights from behavioral economics, cognitive psychology, and management science. Hirschey and Nofsinger (2021) highlight the importance of understanding psychological factors that influence investment analysis and behavior. Forbes (2015) explores the adaptive markets hypothesis, suggesting that behavioral biases may serve adaptive functions in certain contexts, which could explain why some biases persist despite their potential negative effects on decision quality.

To effectively reduce the negative impact of cognitive biases in MSMEs' financial decision-making, recent studies suggest a combination of debiasing strategies and interventions (Benscheidt & Carpenter, 2020). These approaches not only enhance decision quality but also have significant policy implications for supporting MSME development. Awareness and education about cognitive biases can enhance decision-makers' ability to recognize and mitigate these biases in their judgments (Benscheidt & Carpenter, 2020). Additionally, encouraging a balance between linear (analytical) and nonlinear (intuitive) thinking styles can help MSMEs avoid common biases like representativeness and status quo bias (Groves & Vance, 2024). From a policy perspective, implementing training programs that focus on cognitive bias awareness and decision-making strategies can empower MSME leaders to make better financial choices. Developing decision aids that present information in a user-friendly manner can help mitigate biases and improve financial outcomes (Acciarini et al., 2021).

Overall, this study provides an overview of the influence of cognitive bias on the financial decision-making of MSMEs in Bandung City. Although most MSME actors have shown a good tendency in Financial Decision Making, some cognitive biases, such as overconfidence bias and loss aversion bias, still tend to be high. On the other hand, the illusion of control bias negatively affects financial decision-

making ability. These findings indicate the importance of increasing MSME actors' awareness of cognitive biases and their impact on financial decision-making. Mitigation efforts can be done through training programs, mentoring, and providing relevant information.

While this study provides valuable insights into the influence of cognitive biases on financial decision-making among MSMEs in Bandung City, several areas warrant further investigation. Future research could explore how digital technologies and financial technology (fintech) innovations might help mitigate cognitive biases in financial decision-making. Additionally, longitudinal studies could examine how cognitive biases evolve as MSMEs mature and gain experience. Further research might also investigate the interaction between different types of cognitive biases and how they collectively influence financial decision-making in various economic conditions. As suggested by Smoliński and Brycz (2024), exploring individual differences in metacognitive awareness could provide insights into why some MSME actors are more susceptible to certain biases than others.

CONCLUSION

Overall, MSMEs in Bandung City show promising trends in financial decision-making. However, there are still some cognitive biases that tend to be high, such as overconfidence bias and loss aversion bias. Nonetheless, considerable variation in the level of cognitive biases and financial decision-making ability among the respondents suggests increasing MSME actors' awareness of cognitive biases and developing strategies to minimize their negative impact on financial decision-making.

Of the ten cognitive bias variables studied, only three were statistically proven to affect the financial decision-making of MSMEs in Bandung City. Overconfidence bias (OB) and loss aversion bias (LAB) showed a positive relationship with financial decision-making, which means that the higher the level of these biases, the better the financial decision-making. In contrast, the illusion of control bias (IB) is negatively related to Financial Decision Making, which indicates that the higher the level of this bias, the worse financial decision-making is. Seven other cognitive bias variables (confirmation bias, herding bias, anchoring bias, hindsight bias, endowment bias, regret aversion bias, and status quo bias) did not significantly affect Financial Decision Making, shows that not all cognitive biases have the same impact on financial decision-making ability. There is a possibility that other factors are more instrumental in influencing the financial decisions of MSME actors.

MSME actors must increase awareness of cognitive biases, seek comprehensive information, objectively evaluate decisions, manage risks, and dare to make changes. The government and institutions supporting MSMEs need to increase socialization and education, provide training and mentoring programs, and develop tools for financial decision-making. This implementation is expected to help MSMEs in Indonesia, including Bandung, to improve the quality of financial decision-making, drive business growth, and ultimately contribute to sustainable economic development. For researchers, it is necessary to expand the research and develop intervention models to minimize the negative impact of cognitive bias on the financial decision-making of MSMEs.

ACKNOWLEDGEMENT

The author realizes that this research would not have been successful without the support and assistance of various parties. Therefore, the author would like to express his deepest gratitude to the MSME actors in Bandung City who have been willing to take the time to participate in this research.

REFERENCES

Acciarini, C., Brunetta, F., & Boccardelli, P. (2021). Cognitive biases and decision-making strategies in times of change: a systematic literature review. *Management Decision*. https://doi.org/10.1108/MD-07-2019-1006

Acedo, F. J., & Muñoz, J. M. (2004). Cultural influences on cognitive biases: The case of anchoring bias. *International Journal of Psychology*, *39*(3), 213-219.

ADB. (2020). *Tackling the COVID-19 economic crisis in Asia and the Pacific*. Asian Development Bank.

Ahmad, M., Shah, S. Z. A., & Abbass, Y. (2021). The role of heuristic-driven biases in entrepreneurial strategic decision-making: evidence from an emerging economy. *Management Decision*. https://doi.org/10.1108/MD-09-2019-1231

Audretsch, D. B., & Thurik, A. R. (2001). What is new about the new economy?: Sources of growth in the managed and entrepreneurial economies. *Industrial and Corporate Change*, *10*(1), 267-315.

Baddeley, M. (2020). Information cascades and herding in financial markets: Evidence from a new retail investor survey. *Journal of Economic Psychology*, *81*(4), 102297.

Bank Indonesia. (2022). *Laporan Survei Nasional Literasi dan Inklusi Keuangan 2022*. Bank Indonesia.

Baron, J. (2008). *Thinking and deciding* (4th ed.). Cambridge University Press.

Bell, D. E. (2017). Utility, regret, and decision theory: Recent developments and applications in finance. *European Journal of Operational Research*, *256*(1), 1-11.

Benoit, J. P., & Dubra, J. (2023). Apparent overconfidence: Replication and extensions. *Journal of Economic Behavior & Organization*, *212*(C), 316-335.

Benscheidt, K., & Carpenter, J. P. (2020). Advanced Counter-Biasing. *Journal of Economic Behavior and Organization*. https://doi.org/10.1016/J.JEBO.2020.05.019

Bikhchandani, S., & Sharma, S. (2023). Herd behavior in financial markets: A review and synthesis. *Review of Financial Studies*, *36*(8), 3564-3597.

BPS. (2024). *Statistik UMKM Indonesia 2024*. Badan Pusat Statistik.

Costa, D. F., Carvalho, F. de M., Moreira, B. C. de M., & Prado, J. W. do. (2017). Bibliometric analysis on the association between behavioral finance and decision making with cognitive biases such as overconfidence, anchoring effect and confirmation bias. *Scientometrics*. https://doi.org/10.1007/S11192-017-2371-5

Cueva, C., & Rustichini, A. (2015). Is financial instability male-driven? Gender and cognitive skills in experimental asset markets. *Journal of Economic Behavior and Organization*. https://doi.org/10.1016/J.JEBO.2015.08.014

Devenow, A., & Welch, I. (2020). Rational herding in financial economics revisited: New evidence from asset allocation. *Journal of Finance*, *76*(5), 2745-2783.

Dupont, D. Y., & Lee, G. (2002). The endowment effect, status quo bias and loss aversion: rational alternative explanation. *Journal of Risk and Uncertainty*. https://doi.org/10.1023/A:1016371414952

Engler, J.-O., Abson, D. J., & Wehrden, H. von. (2019). Navigating cognition biases in the search of sustainability. *AMBIO: A Journal of the Human Environment*. https://doi.org/10.1007/S13280-018-1100-5

Ericson, K. M. M., Ericson, K. M. M., Fuster, A., Fuster, A., & Fuster, A. (2014). The Endowment Effect. *Annual Review of Economics*. https://doi.org/10.1146/ANNUREV-ECONOMICS-080213-041320

Fischhoff, B. (2016). Debiasing decision makers: From hindsight bias to sustainable judgments. *Judgment and Decision Making*, *11*(6), 547-562.

Forbes, W. (2015). *Behavioral finance: The adaptive markets hypothesis*. John Wiley & Sons.

Giraud, R. (2012). Money matters: an axiomatic theory of the endowment effect. *Economic Theory*. https://doi.org/10.1007/S00199-010-0552-Z

Groves, K. S., & Vance, C. M. (2024). Avoiding critical entrepreneurial cognitive errors through linear/nonlinear thinking style balance. *Journal of Small Business Management*. https://doi.org/10.1080/00472778.2024.2363837

Hiller, N. J., & Hambrick, D. C. (2017). Self-evaluation, external evaluation, and entrepreneurial overconfidence: An analysis of venture capitalists' investment decisions. *Journal of Management Studies*, *54*(8), 1288-1315.

Hirschey, M., & Nofsinger, J. R. (2021). *Investment analysis and behavior* (3rd ed.). McGraw-Hill.

Kahneman, D. (2021). *Thinking, fast and slow* (2nd ed.). Farrar, Straus and Giroux.

Kiarie, F. K., & Kinyua, G. (2021). Cognitive biases and financial management decisions among small and medium enterprises in Kenya: A systematic review. *International Journal of Business Management, Entrepreneurship and Innovation*, *3*(3), 75-88.

Li, M., Petruzzi, N. C., & Zhang, J. (2017). Overconfident Competing Newsvendors. *Management Science*. https://doi.org/10.1287/MNSC.2016.2469

Loomes, G., & Sugden, R. (2018). Regret theory and measurable utility: Recent developments and applications. *Journal of Economic Surveys*, *32*(4), 1003-1027.

Malmendier, U., & Taylor, T. (2015). On the Verges of Overconfidence. *Journal of Economic Perspectives*. https://doi.org/10.1257/JEP.29.4.3

Moore, D. A., & Schatz, D. (2017). The three faces of overconfidence. *Social and Personality Psychology Compass*, *11*(8), 1-12.

Nga, J. K. H., & Yien, L. K. (2013). The influence of personality trait and demographics on financial decision making among Generation Y. *Young Consumers: Insight and Ideas for Responsible Marketers*. https://doi.org/10.1108/YC-11-2012-00325

Northcraft, G. B., & Neale, M. A. (2017). Anchoring bias in strategic decision-making: Role of experience and expertise. *Organizational Behavior and Human Decision Processes*, *142*(1), 55-67.

O'Connor, G. E. (2019). Exploring the Interplay of Cognitive Style and Demographics in Consumers' Financial Knowledge. *Journal of Consumer Affairs*. https://doi.org/10.1111/JOCA.12195

OECD. (2016). *Financing SMEs and entrepreneurs 2016: An OECD scoreboard*. OECD Publishing.

Otoritas Jasa Keuangan. (2021). *Survei Nasional Literasi dan Inklusi Keuangan 2021*. OJK.

Pouget, S., Sauvagnat, J., & Villeneuve, S. (2017). A mind is a terrible thing to change: confirmatory bias in financial markets. *Review of Financial Studies*. https://doi.org/10.1093/RFS/HHW100

Raj, G. P. (2024). Biases and investment decision: an analysis of demographics using PLS-MGA. *International Journal of Accounting and Information Management*. https://doi.org/10.1108/ijaim-08-2024-0282

Samuelson, W., & Zeckhauser, R. (2020). Status quo bias in multi-alternative decision making: Implications for business strategy. *Strategic Management Journal*, *41*(5), 959-978.

Smoliński, P. R., & Brycz, H. (2024). Individual differences in inaccurate versus accurate economic judgment and decision making. Metacognitive approach. *Personality and Individual Differences*. https://doi.org/10.1016/j.paid.2023.112500

Sumiyana, S., Na'im, A., Nugroho, A. H. L., & Kurniawan, F. D. (2023). Multiple measurements of CEOs' overconfidence and future earnings management: evidence from Asia-Pacific developing countries. *Humanities & Social Sciences Communications*. https://doi.org/10.1057/s41599-023-02279-5

Suyanto, S., & Wibowo, A. (2021). The Influence of Confirmation Bias on Investment Decision Making: The Case of Individual Investors in Indonesia. *Jurnal Akuntansi dan Keuangan Indonesia*, *18*(2), 127-141.

Tambunan, T. (2020). MSMEs in Indonesia: Important Issues on Its Role, Growth, and Development. *Journal of Economics and Business*, 23(2), 167-182.

Thaler, R. H. (2016). Behavioral economics: Past, present, and future. *American Economic Review*, *106*(7), 1577-1600.

Tjandrasa, B. B., & Tjandraningtyas, J. M. (2018). The Effects of Personality Types and Demographic Factors on Overconfidence Bias and Decision Making of Investment Types. *International Journal of Biological Sciences*. https://doi.org/10.9744/IJBS.1.2.57-62

Tomal, M. (2024). The Endowment Effect and Housing Studies: The Role of Multiple Reference Points. *Critical Housing Analysis*. https://doi.org/10.13060/23362839.2024.11.2.576

Tversky, A., & Kahneman, D. (2018). Prospect theory and financial decision making: A retrospective evaluation. *Annual Review of Finance and Economics*, *10*(1), 345-367.