



2528-9705



IMPACT OF BEHAVIORAL FACTORS ON THE STOCK INVESTMENT DECISIONS OF GENERATION Z IN VIETNAM

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ABSTRACT

The study used Structural Equation Modeling (SEM) to analyze the influence of behavioral factors on the investment decisions of Vietnam's Generation Z. 558 valid survey respondents revealed that overconfidence, fear of missing out, representativeness, and risk attitude had a positive, significant effect on decision-making. On the other hand, framing and herding were found to be unrelated to investment decisions. Fear of missing out is frequently studied in consumer psychology, shopping, and entertainment but has received little attention in investment research. Therefore, the "fear of missing out" effect variable is considered a new point in research. Based on this, the authors proposed several suggestions to promote Generation Z's securities investment in Vietnam. These recommendations include the need for Generation Z investors to exercise control over high-frequency, high-risk transactions, maintain a calm disposition, and analyze investments based on predetermined strategies and methods while avoiding being influenced by negative psychology in investment behavior. Furthermore, personal finance and investment management should be included in both general and university education programs. Misinformation in the media should be monitored, and securities companies should be held accountable with sanctions for information manipulation.

Keywords: Overconfidence, Fear of missing out, Representativeness, Risk attitude, Generation Z.

INTRODUCTION

The Vietnamese stock market and the global market have experienced a surge in participation from Generation Z, referring to individuals born between 1995 and 2010 (Wijaya & Afgani, 2021). This generation exhibits distinctive approaches to living, learning, trading, and investing in contrast to previous cohorts, facilitated by technological advancements that allow access to vast knowledge through mobile phones and internet connectivity (Rothman, 2016).

In the domain of behavioral finance, research in Vietnam and worldwide has primarily focused on exploring the influence of behavioral factors on the investment decisions of individual investors. These factors are generally categorized into four key domains: self-deception, heuristic simplification, emotion, and social interaction (Hien, 2012). Nonetheless, scant literature exists on the investment preferences of Generation Z, a new cohort of investors who often rely on familial support and may not yet have achieved financial independence. Therefore, it is

imperative to investigate the "Impact of Behavioral Factors on the Stock Investment Decisions of Generation Z in Vietnam" to bridge this research gap.

Many studies conducted in different nations have established that psychological factors are key determinants in shaping investors' decision-making processes. For instance, Bogunjoko (2021) examined the Nigerian stock market, Ton (2019) investigated the Vietnamese stock market, Abul (2019) explored the Kuwaiti stock market, Cucinelli *et al.* (2016) studied the Italian stock market, and Sajeev *et al.* (2021) analyzed the Indian stock market. Despite the abundance of research, there is a dearth of information regarding the investment preferences of Generation Z. As a relatively novel cohort of investors, many of whom may still depend on family support, it is crucial to investigate the "Impact of Behavioral Factors on the Stock Investment Decisions of Generation Z in Vietnam".

This study aims to investigate the influence of behavioral factors on investment decisions made by Generation Z in Vietnam. By examining the role of factors such as overconfidence, fear of missing out, representativeness, and risk attitudes, this study makes theoretical and practical contributions to the understanding of stock investment decision-making. Notably, the study highlights the impact of fear of missing out, a psychological factor that has been previously explored in the domains of entertainment and consumption, but not in the context of stock investment behavior. As such, this study uniquely contributes to the literature on behavioral finance.

MATERIALS AND METHODS

Investment Decisions

In its most general sense, investing is the process of using existing resources to pursue future goals (Deviyanti *et al.*, 2017). Decision-making is the act of selecting an option from a set of alternatives, following an evaluation of all the options. When making investment decisions, investors must take into account market conditions, risks, and returns (Kengatharan & Kengatharan, 2014). Therefore, the decision to invest in securities is to allocate financial resources to buying and selling securities, based on risk tolerance and investment objectives to obtain the anticipated profitability.

Typically, respondents answer with a yes or no when asked about a decision. However, as stock investing requires certain knowledge, many studies have used questions for people who have participated in stock investing to acquire accurate and objective answers (Ton, 2019; Sajeev *et al.*, 2021). Putri and Hamidi (2019) noted several indicators that measure investment decisions, such as return, risk, and investment duration. In this study, investment decisions refer to investors being satisfied with their decisions to buy and sell securities.

The factors influencing individual investors' investment decisions can be studied based on traditional finance theory or behavioral finance theory. Traditional finance theory assumes investors are rational and make decisions based on profit maximization. However, evidence shows that investors in the market are not always rational in investment decisions (Thaler, 2005; Bakar & Yi, 2016). Other aspects, such as investor behavior, have been studied under the name "behavioral finance" for the past few decades.

Factors Influencing Investment Decisions

Herd Behavior

Herd behavior, as defined by Graham (1999) and Devenow and Welch (1996), refers to the tendency to imitate the actions of others. In the context of investing, it is characterized by following the actions of other investors or market movements instead of relying on one's information and strategies (Devenow & Welch, 1996).

Research by Abul (2019), Bogunjoko (2021), and Scharfstein and Stein (1990) suggests that herd behavior arises from the uncertainty of market information. Investors often evaluate market information based on the actions of others in order to reduce the cost of checking and evaluating. Furthermore, Chiang and Zheng, (2010); Ton (2019), and Gupta and Kohli (2021) found that herd behavior has played a significant role in the rise of stock market investing.

Cilliers (2017) proposes that Generation Z is characterized by increased team bonding, which allows them to communicate, share information, and collaborate effectively through technology-based platforms.

Hence, based on the above literature, we propose the following hypothesis:

H1: Herding behavior positively impacts the stock investment decisions of Generation Z in Vietnam.

Overconfident

Drawing upon the perspectives of Odean (1998), Ton and Dao (2014), Shiller (2015), and Jha (2016), overconfidence is a phenomenon whereby investors believe they possess the skills, experience, or intuition to generate greater returns than the market, despite a lack of supporting evidence. While self-confidence can be a determinant of success, overconfidence can be dangerous as it may lead to over-trading, ignoring conflicting information, misjudging risk, and contributing to the formation of speculative bubbles (Scheinkman & Xiong 2003; Thaler 2005; Bogunjoko 2021).

Ton and Dao (2014), Riaz and Iqbal (2015), and Bakar and Yi (2016) have found a positive correlation between overconfidence and investment decisions in the stock market. However, Abul's study (2019) did not find any evidence of the impact of overconfidence on investor decisions in Kuwait.

Generation Z investors are characterized by high levels of confidence and the tendency to make quick decisions. In light of previous research by Ton and Dao (2014), Riaz and Iqbal (2015), Bakar and Yi (2016), we hypothesize the following:

H2: Overconfidence positively impacts the decision to invest in securities among Generation Z in Vietnam.

Fear of Missing Out (FOMO)

Fear of Missing Out (FOMO) is the anxiety of not partaking in activities or experiences with better potential outcomes (Przybylski *et al.*, 2013). FOMO can cause investors to hastily invest in an asset due to fear of missing out on the returns of others. For instance, when a stock's price increases rapidly, an investor might be tempted to buy it without considering its true growth potential. FOMO is characterized by the need to stay connected to what others are doing. Social media platforms have made it easier to access real-time information about activities, events, and



conversations (Przybylski *et al.*, 2013). Generation Z grew up in a globally interconnected world and information about each other is widely shared, enabling the FOMO effect. Therefore, this study postulates:

H3: Fear of Missing Out positively affects Generation Z's stock investment decisions in Vietnam.

Framing

The concept of framing, introduced by Kai-Ineman and Tversky (1979), refers to the tendency of individuals to make decisions based on how information is presented. Research conducted by Ritter (2003), Diacon and Hasseldine (2007), and Wahla *et al.* (2019) demonstrate that investors prefer visual information to textual information, and are more likely to favor information that aligns with their existing knowledge and assumptions. Additionally, research indicates that investors view positively framed information more favorably than negatively framed information.

In examining the impact of representativeness on the investment decisions of Generation Z, Wahla *et al.* (2019), Csobanka (2016), and Gonzalez *et al.* (2005) have conducted research that suggests that framing does indeed influence investment decisions. To further explore this impact, the authors have formulated the following hypothesis:

H4: Framing positively impacts the securities investment decisions of Generation Z in Vietnam.

Representativeness

The tendency to rely on representativeness leads people to prioritize recent information when making decisions, disregarding previous information. This means they assess the probability of future events based on how similar they are to a typical situation (Jha, 2016). Studies have demonstrated that representativeness has a beneficial effect on individual investors' stock investment decisions. Investors prefer positive feedback from smaller stocks from growing companies to that of large stocks from established companies (Lakonishok *et al.*, 1992). Lauricella (2019) also investigated a range of large and small stocks from 1999 to 2019 and concluded that investors preferred large stocks from stable companies over growing small stocks and that the chance for a smaller stock to outperform a larger one was slim. Both of these studies do not offer a definitive answer on which stocks investors should invest in, illustrating how this kind of bias can steer an investor away from making the right decisions. However, Ton (2019) also studied the Vietnamese stock market and found representation is fairly common among individual investors. Consequently, the authors postulate:

H5: Representation has a favorable impact on the securities investment decision of Generation Z in Vietnam.

Risk Attitude

According to Olsen (1997) and Dewanty and Isbanah (2018), attitude toward risk refers to an individual's willingness to take risks in the pursuit of potential rewards. Individuals with a high-risk tolerance are more inclined to invest in options with higher levels of risk and less likely to



opt for risk-free alternatives. Moreover, research by Weber *et al.* (1998) and Antoniou *et al.* (1997), Abul (2019) suggests that a risk-taking attitude has a positive effect on an individual's intention to invest in financial assets.

Age is also a key factor affecting an individual's risk propensity. In this regard, studies show that Generation Z investors are more likely to take risks than their predecessors (Sajeev *et al.*, 2021; Wang 2001). Gen Z is normally rated as a risk-taking generation, and research by Wijaya and Afgani (2021) confirms this assertion by revealing that risk tolerance positively impacts the stock investment decisions of Generation Z in Bandung, Indonesia.

Existing literature, therefore, provides compelling evidence supporting the notion that a risk-taking attitude positively impacts stock investment decisions. Based on these findings, the present study posits the following hypothesis:

H6: Risk attitude favorably impacts the decision to invest in securities among Generation Z in Vietnam.

Research Model

The theory of behavioral factors affecting stock investment decisions of Generation Z in Vietnam includes (1) herd, (2) overconfidence, (3) fear of missing out, (4) framing, (5) representativeness, (6) risk attitude. The research model is proposed in **Figure 1**:

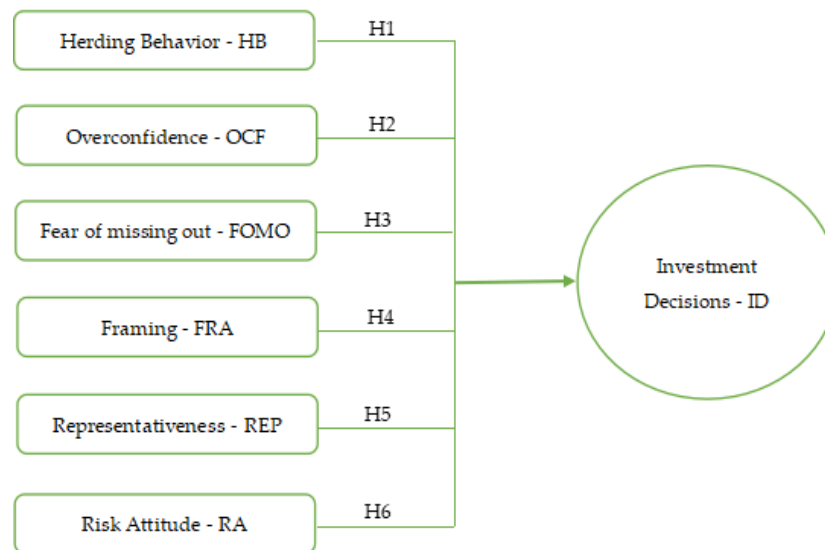


Figure 1. The proposed research model

Source: Proposal by author

Research Methodology

Qualitative Survey

Qualitative research was conducted to assess the appropriateness of the factors affecting the securities investment decisions of Generation Z in Vietnam. Adjustments were made to the survey before it was widely distributed. In-depth interviews were conducted with 30 Gen Z investors, either at coffee shops or over the phone, lasting between 15 and 35 minutes. Investors were



introduced from 8 securities companies in Vietnam including: SSI Securities Company (2 people), Mirae Asset Securities Company (3 people), Vietcombank Securities Company (3 people), VNDirect Securities Company (5 people), MB Securities Company (4 people), VPS Securities Company (4 people), Viet Securities Joint Stock Company (4 people), AIS Securities Company (5 people).

Source: Proposal by author

Quantitative Research

This survey of Generation Z investors was conducted from April 2022 to September 2022. It has two parts: Part 1 gathers general information about the interviewee, while Section 2 consists of 26 questions on a five-level Likert scale (ranging from Strongly Disagree to Strongly Agree). The survey was distributed to investors via Google Forms through securities companies and universities. The scale was constructed based on prior studies, supplemented with the results of in-depth interviews, and tailored to the scope and objectives of the study (Table 1).

Table 1. Origin of the scale of variables

No	Variable Name	Code	Number of observations	Source
1	Herding behavior	HB	5	Chiang and Zheng (2010), Abul (2019), results of in-depth interviews.
2	Overconfidence	OCF	4	Abul (2019), Bogunjoko (2021), results of in-depth interviews.
3	Fear of missing out.	FOMO	4	Przybylski <i>et al.</i> (2013), Bogunjoko (77634), results of in-depth interview
4	Framing	FRA	4	Csobanka (2016), results of in-depth interviews.
5	Representativeness	REP	3	Bogunjoko (2021), Ton (2019), results of in-depth interviews.
6	Risk attitude	RA	3	Abul (2019), Sajeev <i>et al.</i> (2021), results of in-depth interviews.
7	Investment Decisions	ID	3	Sajeev <i>et al.</i> (2021), results of in-depth interviews.

Source: Proposal by author

Research Sample

The survey collected 672 questionnaires in total, but only 558 were valid. Results showed that the level of Gen Z securities investors in Vietnam is quite high, with most being university and postgraduate students. However, their investment experience is not extensive and the value of their trading accounts is relatively small (mainly less than 1 billion VND) and their investment returns are not high (mainly under 10%). The statistical results describe the study sample in Table 2:

Table 2. Descriptive statistics of the study sample

Factor	Observed variables	Frequency	Weight
Gender	Male	320	57.35%
	Female	234	41.94%
	Other	4	0.72%
Academic level	High school	29	5.2%
	Colleges	14	2.51%
	Universities	419	75.09%
	Post-Graduate	96	17.2%
Number of years of experience in investment	Below 1 year	194	34.77%
	From 1-3 years	168	30.11%
	From 3-5 years	129	23.11%
	More than 5 years	67	12.01%
Total value of the trading account	Under VND 50 million	206	36.92%
	From 50 million – 300 million VND	186	33.33%
	From 300 million – 1 billion VND	97	17.38%
	From 1 billion – 5 billion VND	37	6.63%
	From 5 billion – 10 billion VND	18	3.23%
	Over 10 billion VND	14	2.51%
Results of stock investment over time	Loss	207	37.10%
	Profit less than 10%	250	44.80%
	Profit ranging from 10-30%	67	12.01%
	Profit ranging from 30-50%	19	3.40%
	Profits over 50%	15	2.69%

Source: Proposal by author

Data Processing

The study employed a rigorous methodology to ensure the reliability and validity of the measurement scale. Firstly, Cronbach's Alpha coefficient was calculated to establish the scale's internal consistency, with a threshold of 0.7 deemed acceptable. Additionally, an exploratory factor analysis (EFA) was conducted to assess the convergence and discriminant validity of the scale, with the criteria for factor loading set at > 0.5 , Kaiser-Meyer-Olkin (KMO) coefficient between 0.5 and 1, significance level (Sig) < 0.05 , and the percentage of variance extracted $> 50\%$. The Varimax factor rotation method was employed for factor extraction.

Confirmatory factor analysis (CFA) was performed to further validate the research model using AMOS software. The goodness-of-fit of the model was assessed through several indices, including chi-square/degrees of freedom (χ^2/df) < 3 (Hair *et al.*, 1998), goodness-of-fit index (GFI), Tucker-Lewis index (TLI), and comparative fit index (CFI) > 0.8 (Segars & Grover 1993), and root mean square error of approximation (RMSEA) < 0.05 (Taylor *et al.*, 1993).



Finally, the research hypotheses were tested using the structural equation modeling (SEM) analysis, which allowed for the examination of the relationships among the latent variables. The study adopted a linear structure model with the aforementioned goodness-of-fit criteria.

RESULTS AND DISCUSSION

Assess the Reliability of the Scale

The results of the Cronbach's Alpha test analysis indicate the reliability of the scale and the data values included in the analysis when Cronbach's Alpha coefficient of all variables is greater than 0.7. Simultaneously, if observations are removed, Cronbach's Alpha If Item Deleted coefficient is smaller than Cronbach's Alpha coefficient of the group (**Table 3**).

Table 3. Descriptive statistics of the study sample

No	Variable	Code	Cronbach's Alpha
1	Herding behavior	HB	0.850
2	Overconfidence	OCF	0.910
3	Fear of missing out.	FOMO	0.887
4	Framing	FRA	0.891
5	Representativeness	REP	0.904
6	Risk attitude	RA	0.762
7	Investment Decision (Dependent Variable)	ID	0.910

Source: Proposal by author

Analysis

The exploratory factor analysis (EFA) process confirms the suitability of the data for analysis, as indicated by factor loading coefficients greater than 0.5 that demonstrate an appropriate correlation between the observed variables and selected factors in the model. Moreover, the analysis must satisfy several conditions, including a Kaiser-Meyer-Olkin (KMO) coefficient of independent variables is 0.840, dependent variable is 0.728, between 0.5 and 1, the extracted variance of the independent variable is 73.994%, the dependent variable is 78.352%, both are greater than 50%, and the convergence and discriminant validity of the factors. The former pertains to the observed variables converging on a single factor, while the latter indicates that the variables associated with a given factor are distinct from those related to other factors.

Source: Proposal by author

CFA Analysis

The results of the analysis show the conformance of the model in **Figure 2**, the measurements of the value of the model, and whether the measurements are good or very good (Hoe, 2008). The load factor is greater than 0.5, so it is not a variable. Chi-square/df = 2.179 (<3); GFI = 0.924 (>0.9); TLI = 0.954 (>0.95), CFI = 0.961 (>0.95); RMSEA = 0.046 (<0.06).

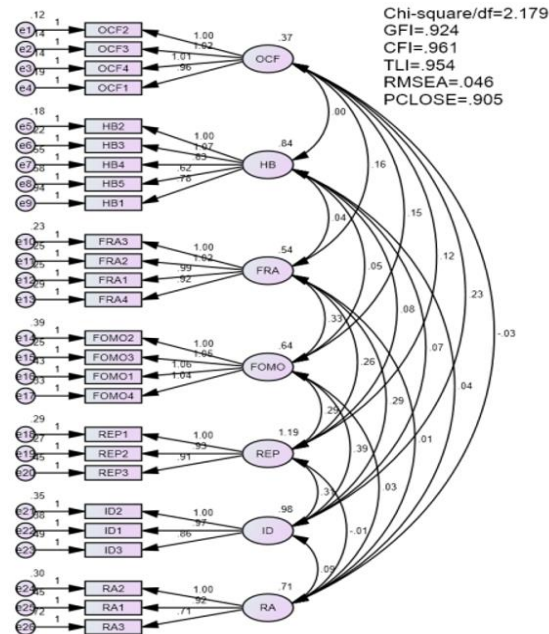


Figure 2. CFA analysis.
Source: Proposal by author

Structural equation modeling results (SEM) Conducting SEM model analysis for the research model in **Figure 3**, we find that the aggregate indicators are satisfactory. Specifically, Chi-square/df = 2.179 (<3); GFI = 0.924 (>0.8); TLI = 0.954 (>0.8); CFI = 0.961 (>0.8); RMSEA = 0.046 (<0.05).

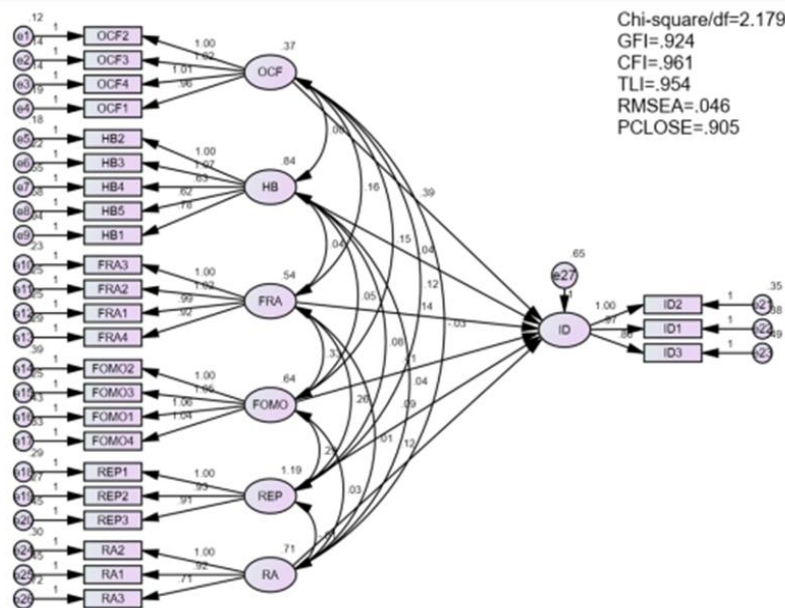


Figure 3. SEM Model Analysis
Source: Proposal by author

Table 4. Coefficient estimates of model parameters

Hypothesis	Relationship	Weight	S.E.	C.R.	P	Conclusion
H2	ID <--- OCF	.387	.073	5.290	***	Accepted
H1	ID <--- HB	.037	.044	.835	.403	Rejected
H4	ID <--- FRA	.135	.074	1.833	.067	Rejected
H3	ID <--- FOMO	.406	.069	5.860	***	Accepted
H5	ID <--- REP	.093	.041	2.300	.021	Accepted
H6	ID <--- RA	.123	.051	2.386	.017	Accepted

Table 4 shows that the research model has a relevant, positive, and significant impact on behavioral financial factors on the stock investment decisions of Generation Z in Vietnam. Except for the H1 and H4 hypotheses, all hypotheses H2, H3, H5, and H6 are accepted.

The results of the study indicate that various behavioral factors such as overconfidence, fear of missing out, representativeness, and risk attitude significantly impact the investment decision-making of Generation Z in Vietnam. Conversely, herding behavior and framing do not significantly impact their investment decisions.

This study's results demonstrate the disparity in investment behavior between Generation Z and previous generations of investors, as evidenced by the findings of Chiang and Zheng (2010), Abul (2019), and Ton (2019). This divergence can be explained by Generation Z's characteristics of increased group bonding, which enables them to engage in effective discussion and sharing, yet be financially and technologically savvy enough to be independent, proactive, and less influenced by herd behavior. In contrast, Ton's research (2019) on the Vietnamese stock market surveyed mostly previous-generation investors, who tend to participate in the stock market without financial knowledge and cannot conduct an independent analysis. They rely on brokers' recommendations or acquaintances' advice to make investment decisions.

Interestingly, this study shows that framing has no significant impact on the securities investment decisions of Generation Z in Vietnam, in contrast to the findings of Ritter (2003) and Wahla *et al.* (2019). This could be due to the fact that Wahla *et al.* (2019) suggest that investors are more susceptible to framing when they cannot fully comprehend additional information, thus making them vulnerable to bias. On the other hand, Generation Z investors possess the knowledge and skills to manage their finances intelligently and synthesize various information sources to obtain knowledge and understanding (Stuenkel *et al.*, 2005; Harputlu & Kendirli, 2019). These factors could explain why Generation Z is not impacted by framing when making investment decisions, showing their divergent investment behavior from previous generations.

In contrast, overconfidence significantly positively impacts Generation Z's stock investment decisions in Vietnam at a 95% confidence level. This result is in line with the research of Ton and Dao (2014), Scheinkman and Xiong (2003), Bakar and Yi (2016), and reflects the reality of Vietnam, where early financial understanding combined with proficient use of technology in searching and exploiting knowledge gives Gen Z higher confidence than previous generations. However, such high confidence levels and quick decision-making can also result in losses due to high-risk investments made without adequate research and evaluation. The sample statistics indicate that the investment results of Generation Z in Vietnam are mainly losses or profits of less than 10%.



Furthermore, the fear of missing out significantly impacts Generation Z's stock investment decisions in Vietnam at a 95% confidence level. This behavioral factor is frequently studied in consumer psychology, shopping, and entertainment but has received little attention in investment research. Therefore, the "fear of missing out" effect variable is considered a new point in research on the impact of behavioral factors on stock investment decisions. Unlike the herd mentality of blindly following the crowd, Generation Z is motivated by the fear of missing out. With a certain understanding and a desire to achieve financial freedom early or retire early, or achieve the same level of success as their peers, they are urged to participate in the investment market.

Lastly, representativeness also has a significant positive impact on the stock investment decision-making of Generation Z in Vietnam at a 95% confidence interval. This result is consistent with Ton's (2019) and Bogunjoko's (2021) findings. A further explanation suggests that Generation Z tends to make decisions quickly, and with limited financial resources and time, they are influenced by representativeness, i.e., relying on experience or similar situations to make investment decisions.

Recommendations

Based on the research findings, the authors offer several recommendations for developing securities investment strategies that cater to the needs of Generation Z investors. These recommendations include the need for Generation Z investors to exercise control over high-frequency, high-risk transactions, maintain a calm disposition, and analyze investments based on predetermined strategies and methods while avoiding being influenced by negative psychology in investment behavior. Additionally, investors are advised to refrain from purchasing stocks without a proper understanding or analysis of the real development potential, particularly for stocks that are currently in high demand. Investors are encouraged to analyze not only recent information but also long-term information about issuers.

Furthermore, general and university education programs should include personal finance and investment management. The early retirement plans of Generation Z investors, coupled with peer pressure and the goal of achieving financial freedom at a young age, underscores the need for early participation in investment opportunities. Providing students with financial and investment knowledge while in school empowers them to make informed financial decisions. Financial and investment education should also be integrated into practical problems in high school math curricula.

To safeguard the rights and interests of investors, particularly those who are new to the market, educational programs and financial and investment propaganda should be instituted. Misinformation in the media should be monitored, and securities companies should be held accountable with sanctions for information manipulation.

CONCLUSION

Investing in securities is a relatively new concept for Generation Z and has not been extensively studied in Vietnam. While previous research has examined investment decisions among individual investors in general, there has been limited attention given to the unique behavioral psychology of Generation Z, including the fear of missing out, which has been extensively



studied in the context of consumer and entertainment behavior, but not in the domain of investment decisions. Thus, this study aims to address this gap.

The research found that factors such as overconfidence, fear of missing out, representativeness, and risk attitudes significantly impact the stock investment decisions of Generation Z, whereas herding behavior and framing do not. However, this study has some limitations. It focused only on Generation Z investors and did not compare the factors affecting investment decisions between them and other generations such as X and Y. Moreover, the variable "fear of missing out" is a new addition to the model and requires further research to better comprehend its influence. To enhance the understanding of investment decisions among different generations, future research should expand the scope of the study to include a broader range of participants.

ACKNOWLEDGMENTS: This research was funded by the Vinh University, Vinh city, Viet Nam.

CONFLICT OF INTEREST: None

FINANCIAL SUPPORT: None

ETHICS STATEMENT: None

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