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The Impact of Fear of Missing Out (FOMO) And Financial Literacy on Investment Behavior in the Vietnamese Stock Market

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ABSTRACT: The objective is to investigate how individual investors behave while investing within the rapidly digitalising Finance markets of Vietnam, specifically the stock market, particularly focusing on the impact of Fear of Missing Out (FOMO) on their behaviours. The Research Method - combines traditional Financial Literacy (FL) and Digital Financial Literacy (DFL) (as mediating variables), and the two outcomes, Overconfidence Bias (OC), and Herding Bias (HB) are the outcome variables. Data was collected from N=804 valid responses through an online survey of individual investors in Vietnam across all ages and experience levels. SmartPLS 3 was used to study the data through PLS-SEM methodology, and to evaluate the measurement model and the structural model. All of the hypotheses were found to be supported through the Research results. FOMO impacts both OC and HB positively. FL and DFL serve as mediating variables in the FOMO to OC and the FOMO to HB relationships. A key finding shows that DFL serves as a dual construct: DFL reduces HB, but increases OC; while FL consistently lowers HB, it does not affect OC as much as DFL does. The structural model was found to have strong explanatory power for the variables used, where the R^2 value ranged from 0.318 to 0.458. In short, the research emphasizes the many interacting factors affecting investor behaviour within the Vietnam stock market. Furthermore, it outlines the need for various types of financial education and for furthering digital finance in Vietnam.

KEYWORDS: FOMO, financial literacy, investor behaviour, stock market, Vietnam

I. INTRODUCTION

Over the past few years, rapid development in digital technology has profoundly changed the structure of the global financial system and moved it away from traditional ways of doing things with transactions to having them handled online by financial institutions. In the region of Vietnam, which is a fast-growing economy with high rates of digitalization, this trend is clearly evident (Thakor, 2020). The Vietnamese stock market is also benefiting from this trend; it has transformed from an emerging frontier stock market into an attractive choice for both liquidity and market cap growth when compared to stock markets in Southeast Asia. According to data provided by Vietnam Securities Depository and Clearing Corporation (VSDC), between 2020 and 2023 there was an increase of over three times in the number of new trading accounts opened, increasing from approximately 2.3 million accounts in 2019 to over 7.2 million trading accounts in 2023. This growth can be directly attributed to creating new retail investors who are participating in the stock market for the first time due to the availability of Digital KYC solutions (eKYC) and the use of smart apps for mobile trading, which together generated a strong source of internal funds that allowed the stock market to achieve historical highs (VSDC, 2021).

As startling as the rise in total accounts might appear, that isn't also representative of a gain in quality decision-making as well; numerous pieces of evidence demonstrate that there are still severe defects in the structure of behavior among domestic investors such as inadequate risk management and over-reliance on instinct (Mahendra & Purwanto, 2023), while the market gets more active and easier to access, a big part of the debate in both academic and regulatory circles is around how trading decisions are made; rather than making decisions based on systematic cash flow analysis (Graham & Dodd, 2018) or reviewing financials or implementing technical analysis in a methodical manner, a large number of individual investors now find themselves wrapped up in short-term volatility; therefore, buying and selling decisions are often driven by ephemeral emotional states and unproven information, especially from on-line communities. This creates a troubling scenario regarding the inconsistency between cognitive ability and the relative speed at which investors enter into the market (Lusardi & Mitchell, 2014).

Central to this behavioral volatility is the Fear of Missing Out (FOMO) effect - or the fear of missing out on profitable opportunities. With the sheer volume of data created each day in today's era of rapid advances in technology and the stark contrast of our modern way of life from how we've lived for thousands of years, many people are now experiencing FOMO due to social networking platforms such as Facebook, Telegram and Zalo as these networks create online support communities that provide information regarding scenarios that portray extraordinary profit returns (Przybylski et al., 2013). As such, this new source of information creates an invisible but very strong psychological pressure on all who feel that they might lose monetary resources while they are excluded from this group of wealth creation individuals. The presence of FOMO leads many investors to enter the market at "overbought" conditions, where asset prices have been driven up beyond their true value simply because of excitement for the investment group (Devenow & Welch, 1996; Barberis et al., 2018). Therefore, a growing number of individuals who experience the psychological state associated with FOMO are exhibiting greater levels of speculative behavior and contributing to the development of asset bubbles, while also increasing the likelihood for negative price movements. One of the key questions for researchers is why, given the same information available to everyone in this new information age, are there some investors that are able to remain steady while others are easily drawn into the herding mentality? The primary reason is due to Financial Literacy being established as the most natural, sustainable barrier to protect investors from experiencing negative behavioral biases (Lusardi & Mitchell, 2007).

Behavioral finance has been developing into a large area of research that has produced a number of seminal theoretical studies (Kahneman & Tversky, 2013) over its young lifespan. However, the application of behavioral finance theory in the context of a developing country such as Vietnam still does not fulfill many of the theoretical voids that exist within the broader behavioral finance body of literature. First, most previous studies have only focused on identifying the direct relationship between levels of financial literacy and investment efficiency, or treated financial literacy as a static variable in the model (Fernandes et al., 2014). Very few studies examine the dynamic interaction between psychological states (such as FOMO) and the effort to acquire knowledge. Can the fear of being left behind be transformed into a positive motivation, driving investors to equip themselves with knowledge to adapt, or is it merely a factor causing blindness? Second, in the context of a booming digital economy, the concept of traditional financial literacy is no longer sufficient to encompass the execution of modern transactions. The concept of "Digital Financial Literacy"- including skills in using online financial tools, the ability to identify security risks, and digital portfolio management-needs to be placed at the center of the analytical framework to accurately reflect the actual capacity of investors in the Industry 4.0 era (OECD, 2018; Wyman, 2017).

To address the absence of empirical evidence regarding the interplay between psychological triggers and digital competencies, our study is conducted to decode the complex mechanism of FOMO's impact on key behavioral biases: overconfidence bias (OB) and herding bias (HB), through the mediating role of both traditional financial literacy (FL) and digital financial literacy (DFL). We approach the problem using quantitative methods by implementing an online survey, collecting data from a large-scale sample of more than 800 individual investors in Vietnam. Employing Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS software, this study tests direct effects as well as delineates indirect effects, thus developing a complete view of the psychology-cognition-behavior process. This empirical methodology provides accurate estimates of the model's explanatory power with R2 values of 0.318 through 0.458, which confirms the reliability and practical usability of this study's findings in a rapidly digitalizing marketplace.

The research findings reveal two key aspects of financial literacy relating to biased behaviour. One significant outcome is that while digital financial literacy can provide benefits, it cannot entirely resolve the effects of the behavioural biases associated with it as it can create the paradoxical situation where digital financial literacy mitigates (to some extent) the effects of herding behaviour; however, it will also increase the level of confidence the individual has concerning their investment decisions. This indicates that in order to successfully manage these biases, there has to be much more of an integration of the technical cognitive ability of an individual with the behavioural psychological management of that individual.

The format of this paper follows this outline. The theory review and hypotheses will be discussed in section two. Section three will cover information regarding survey data, methodology of the study, and PLS-SEM application. Empirical findings will be reported on and an extensive discussion regarding the implications of FOMO will also be included in section four. Lastly, the paper will be summarised and research limitations highlighted in addition to providing suggestions for future work in section five.

II. LITERATURE REVIEW

A. Theoretical review

1) Concept of Fear of Missing Out

The term Fear of Missing Out (FOMO) has become a widely used psychological concept and has been studied extensively in many disciplines, including psychology and behavioral finance (Przybylski et al., 2013). FOMO can be defined as a state of anxiety that people feel when they think there may be an opportunity to participate in an activity or event (with others) that might benefit them. According to Przybylski et al. (2013), FOMO arises from the inherent need of all humans to interact with others and feel connected via social or cultural events at addition to being able to take advantage of financial opportunities that others may have already done before.

The phenomenon of FOMO (Fear of Missing Out) takes place in the finance and investing context when an investor notices another investor profiting greatly from a given asset or market and becomes anxious to participate so they make irrational investment via decisions based on emotion rather than logic, for example – they purchase the same asset as the other investors due to FOMO (Przybylski et al., 2013). There are many sources of information in terms of the financial markets because of the increasing use of social media and other forms of internet-based communication. As a result of the many sources of information, investors will see how other investors are making money and/or the trends occurring in the market, and therefore compare themselves with those individuals. This is referred to as FOMO and is one of the reasons why investors make decisions based on the general trends of the market (Przybylski et al., 2013).

FOMO influences various aspects of investment behavior, including participation decisions, asset selection, timing of investments, and risk tolerance. In many cases, it leads to hasty investment decisions made without proper due diligence, thereby increasing financial exposure (Przybylski et al., 2013; Baker and Wurgler, 2007).

2) Financial Literacy

Financial literacy refers to an individual's knowledge of and aptitude for making informed financial decisions (Lusardi and Mitchell, 2014). Individuals who are financially literate possess general knowledge of the various financial instruments available to them. They know what interest rates are; they understand the risks associated with various types of assets; they understand the importance of diversifying their portfolios and evaluating their investment options.

In a research project conducted by Lusardi and Mitchell (2014), it has been indicated that financial literacy is critical for helping consumers make effective financial decisions. Consumers who are financially literate are more likely to achieve their long-term goals with their savings and investments; they have the ability to understand how to properly diversify their portfolios to limit their risks; they have the ability to select appropriate investment instruments to achieve their financial objectives.

Financial literacy plays an important role in the field of investing because it allows an investor to have a higher level of understanding of what is taking place in the marketplace, as well as how to better evaluate an investment opportunity (Lusardi and Mitchell, 2014). This understanding helps an investor avoid making impulsive, emotional investment decisions and minimizes their exposure to being overly influenced by psychological factors when making investment decisions.

On the contrary, individuals with limited financial literacy (Lusardi and Mitchell, 2014) will have poor skills in understanding the risks and rewards of any given investment and will often be swayed by non-credible sources of information or by short-term investment trends. For this reason, an investor's level of financial literacy is viewed as a primary determinant of how they will behave while investing.

3) Investment Behavior

Individuals make decisions with respect to how to allocate capital among financial assets in order to maximize their profit potential at some point in the future; this process is known as investment behavior. A number of factors influence individual investment behavior, including economic (external), social (group), and psychological (subjective) factors (Shefrin, 2002; Barberis and Thaler, 2003; Baker and Wurgler, 2007).

Traditional financial theory assumes that all investors are rational decision-makers who make their decisions based on the desire to achieve the maximum level of economic utility. However, research conducted in the area of behavioral finance has demonstrated that investors' decisions are also influenced by mental states and cognitive biases (psychological factors).

Two commonly researched behavioral biases associated with investment decision-making include overconfidence and herding. Overconfidence bias results from an investor's excessive belief in their own ability to make correct predictions about future price movements (Barber and Odean, 2001). In general, highly overconfident investors believe that they can reliably and accurately predict market movements and therefore tend to execute Herding occurs when investors follow the majority's choices instead of conducting independent research. In this sense, many investors following a specific asset class may influence other investors who are considering investing in that same asset class solely due to the larger number of participants (Banerjee, 1992).

4) **Impact of FOMO on Investment Behavior**

FOMO is closely interconnected with an investor's decision-making process (Przybylski et al., 2013). Several major theories give insight into this relationship, including Behavioral Finance (Barberis and Thaler, 2003). The primary proposition put forth by behavioral finance theory is that an individual uses both rational and irrational processes when making financial decisions. Cognitive bias (Kahneman and Tversky, 2013) and emotions strongly influence how an investor will react when they sense a fear of missing out (FOMO) and often causes them to feel pressure to invest to avoid missing out on any profit opportunities. They may invest in instruments that are trending and have price momentum without assessing all of the risk associated with those investments.

The Investment Behaviour of Investors (Festinger, 1954) can also be explained by Social Comparison Theory and how an investor may act under the influence of FOMO (Fear of Missing Out). Individuals evaluate their own level of ability and status by comparing themselves to others. When investors see that other individuals have made a profit by investing in a particular asset class, the investor may feel pressure to invest as a way of alleviating their sense of inferiority. Similarly, herd Behaviour (Becker, 1983) contributes to the decision-making of investors, where investors tend to follow the investment behaviour of the masses when the market is uncertain. The presence of FOMO plays an important role in investors entering the market simply because many others are also doing the same.

5) Impact of Financial Literacy on Investment Behavior

Financial literacy is thought to be an important factor that can support investors in making wise decisions when it comes to investing. Research conducted in the area of behavioural finance has found that those who have a high level of financial literacy are generally able to analyse market information better and to make more effective decisions regarding their investment.

Lusardi and Mitchell (2014) have conducted research showing that financial literacy is beneficial in helping individuals understand financial products, evaluate risk and develop a long-term investing strategy. This helps to reduce emotional decisions and avoid behavioural biases in your decision-making process. It also provides tools to help investors identify risks in the market place and not be influenced by misinformation or trends of speculative investing.

6) The Mediating Role of Financial Literacy

In a number of studies conducted by Lusardi and Mitchell (2014), Hastings, Madrian and Skimmyhorn (2013), and van Rooij, Lusardi and Alessie (2011), the role of financial literacy as a mediating factor in the relationship between psychology and investment behaviour has been reported widely. In particular, studies have documented that financial literacy helps to limit the effects of psychological factors (for example, the fear of missing out) on an individual's investment decisions.

Investors with relatively high levels of financial literacy tend to be more capable of analysing market data objectively; therefore, their investment decisions are less emotionally driven compared to other types of investors. As a result, they tend to make investment decisions based on rational analyses rather than the influence of herd mentality. On the opposite side of the spectrum, investors who do not possess a great deal of financial literacy tend to be much more influenced by the psychological elements of market behaviour (such as FOMO) and as a result, the psychological elements will have a greater effect on their investment behaviour.

B. **Empirical evidences**

1) Research on the impact of FOMO on investment behavior

The phenomenon known as Fear of Missing Out (FOMO) has recently gained considerable attention from researchers in behavioral finance. Studies show that FOMO has a strong influence on the decision-making process of investors in the financial markets.

The study by Przybylski et al., (2013) indicates that when an investor sees someone profiting from an asset, the investor will experience anxiety about missing out on that potential gain. In response to this fear, an investor might haste to open an account to invest, even if they have not yet performed any due diligence or research on the asset. This causes the investor to make an emotional investment decision rather than one that is based on the fundamentals of the asset.

Based on the findings presented in this article Barberis and Thaler (2003), behavioral finance studies indicate that FOMO (fear of missing out) is related to other behavioral biases like herd behavior and overconfidence. When investors feel FOMO, they often act like they are part of a group and believe that they are better than anyone else at finding an opportunity to invest.

Additionally, many empirical studies have shown that the more FOMO there is in relation to an asset class, the more likely investors will participate in speculative trading activity. This becomes even more prominent in volatile market environments where news of possible profits is disseminated quickly through social media and traditional media.

In reference to Vietnam, recent literature suggests that FOMO has a major influence on the decision-making process for individual investors when it comes to investing in assets such as gold, stocks, and cryptocurrencies. As asset prices increase rapidly or if there is a huge amount of information about high profits available, investors will typically be influenced by FOMO and choose to invest consistently with how the overall market is performing when regulated by FOMO.

2) Research on the impact of financial literacy on investment behavior

Financial literacy is considered one of the key factors influencing the way individuals invest financially (Lusardi and Mitchell, 2014) aside from their psychological influences. Previous research (van Rooij, Lusardi and Alessie, 2011) has shown that an investor's financial knowledge is closely related to his/her decisions when it comes to investing money. In other words, the more financially knowledgeable an investor is, the better he/she is able to make value-added choices when making an investment.

Research suggests (Hastings, Madrian and Skimmyhorn, 2013) that those who are financially knowledgeable tend to be able to make investments that contain lower levels of risk as well as have greater returns. Because financial literacy is defined as having good analytical skills, good critical thinking skills, good analytical judgment, and being able to analyze current and historical data (Lusardi and Mitchell, 2014) these traits allow an investor to make decisions based on sound investments (through the use of fundamental and long-term investment analysis) as opposed to simply following rumors and/or short-term trends. Those who have low levels of financial literacy (Lusardi and Mitchell, 2014) tend to be more inclined to make poor investment decisions as a result of being influenced by psychological and informal sources of information. They may tend to make impulsive decisions that are impacted by the actions of other investors. In addition, some studies (van Rooij, Lusardi and Alessie, 2011) found that individuals who possess strong financial literacy skills have the ability to mitigate the impact of behavioral biases when it comes to investing. Specifically, persons with high levels of financial literacy are less likely to follow herd behavior and can exert greater self-control when making investment decisions.

Finally, in the context of the increasing complexity of the financial markets, financial literacy will continue to be viewed as an important factor in assisting investors to make sound decisions and reduce their overall risk exposure in the investment process (Lusardi and Mitchell, 2014).

3) Research on the mediating role of financial literacy in the relationship between FOMO and investment behavior

Grounded in both the theorists and research mentioned earlier, this study proposes a research model to explore the relationships among FOMO, financial literacy, digital financial literacy, and behavioral biases in investment decision-making.

Considerable empirical evidence has indicated that psychological factors, such as FOMO, directly affect the way in which people behave as investors resulting in either rational or irrational/impulsive decisions (Przybylski et al., 2013). Also, the empirical literature supports that being financially literate enables investors to have greater ability to make informed decisions about their investments, as well as diminishing the impact of other types of behavioral bias (Lusardi and Mitchell., 2014).

With technology continuing to play a significant role in how investors access information and make investment decisions, digital financial literacy is becoming an increasingly significant determinant of this process. Finally, prior research indicates that certain behavioral biases (e.g., overconfidence and herding) have shown positive associations with both psychological and cognitive effects in the context of investing.

III. DATA AND RESEARCH METHODOLOGY

A. Data collection

In this study, the research team describes the survey sample based on several demographic characteristics, including gender, age, residential area, field of study or work, and investment experience.

Table 1: Descriptive Statistics of the Sample (N = 804)

Criteria	Characteristics	Frequency	%
Gender	Male	445	55.3
	Female	359	44.7
Generation	Generation Z	427	53.1
	Generation Y	269	33.5
	Generation X	81	10.1

	Baby Boomer Generation	27	3.4
Residential area	Urban	539	67
	Rural	265	33
Sector	Finance/Banking/Insurance	357	44.4
	Information Technology/Software	183	22.8
	Business/Sales	145	18
	Others	119	14.8
Experience in the stock market	I have never invested in the stock market	168	20.9
	Less than 1 year	86	10.7
	From 1 to 3 years	137	17
	From 3 to 5 years	183	22.8
	More than 5 years	230	28.6

Source: *Authors' calculations*

Data from 804 survey respondents has been collected for analysis. Of the respondents, 55.3% were male and 44.7% were female; most were undergraduate or graduate students. The largest age group represented in this study was members of Generation Z (1997-2012), they make up 53.1% of the sample, followed by Generation Y (1981-1996) with 33.5%, Generation X (1965-1980) with 10.1%, and the Baby Boomer generation (1946-1964) with 3.4%. This means that there is a concentration of 'young' people in this study's sample, which is consistent with studying how young people invest and their financial attitudes.

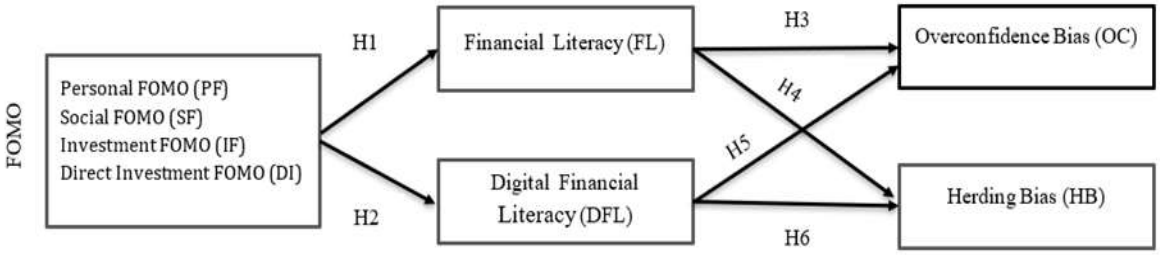
In terms of where these respondents live, 67% live in urban areas, and 33% live in rural areas. The majority of respondents studied finance, banking, or insurance, which suggests that many participants are financially literate.

In terms of investment experience in the stock market, 28.6% of respondents have been investing for more than five years; 22.8% have been investing for 3-5 years; 17% have been investing for 1-3 years; 10.7% have been investing for less than a year; and 20.9% have not invested in the stock market. This distribution provides a complete profile of both novice and experienced stock market investors; therefore, this dataset is very comprehensive and will allow for analysis across a broad range of subjects.

In general, the sampling used in this survey is biased toward young people, people who live in cities, and people with incomes that are low to moderate. This provides a solid foundation for future analyses of how people invest as it relates to financial literacy and how psychological factors influence investing behaviour.

B. Research Model

Figure 1: Research model



The authors of this study propose a research model based on the Fear of Missing Out Theory, Behavioral Finance Theory, Financial Literacy Theory, and further extending the research conducted by Gerrans et al. (2023), which is illustrated in Figure 1.

The proposed research model presented in Figure 1 addresses the FOMO and examines its relationships between financial knowledge, and other behavioral biasing factors with regard to investors' decision-making when making the investment. In this proposed model, FOMO will be defined with respect to a multi-dimensional concept that consists of Personal FOMO (PF), Social FOMO (SF), Investment FOMO (IF), and Direct Investment FOMO (DI).

Accordingly, the proposed research model posits that FOMO impacts both Financial Literacy (FL) and Digital Financial Literacy (DFL). Financial literacy will be measured via a number of observed variables associated with investors' comprehension of financial concepts, while digital financial literacy will be measured based on investors' abilities to retrieve and comprehend financial information available via digital means. Additionally, the research model will investigate the relationship between Financial Literacy and Digital Financial Literacy, and Overconfidence Bias (OC) and Herding Bias (HB) with respect to an investor's behavior during the investment decision-making process.

C. Measurement research model

Based on proposals and recommendations collected from previous studies related to this topic, a questionnaire was designed. Data were collected between November 1 and November 16, 2025, using a quantitative questionnaire measured using a 5-point Likert scale, and containing both primary questions about the study and demographic information about the survey participants.

Table 2: Measurement research model

Symbol	Statement	Reference
Personal FOMO (FOMO_P)		
FOMO_P_1	I feel anxious when I do not experience events/opportunities.	Zhang, Jiménez, and Cicala (2020)
FOMO_P_2	I believe I am falling behind compared with others when I miss events/opportunities.	
FOMO_P_3	I feel anxious because I know something important, or fun must happen when I miss events/opportunities.	
FOMO_P_4	I feel sad if I am not capable of participating in events due to constraints of other things.	
FOMO_P_5	I feel regretful of missing events/opportunities.	
Social FOMO (FOMO_S)		
FOMO_S_1	I think my social groups view me as unimportant when I miss events/opportunities.	Zhang, Jiménez, and Cicala (2020)
FOMO_S_2	I think I do not fit in social groups when I miss events/opportunities.	
FOMO_S_3	I think I am excluded by my social groups when I miss events/opportunities.	
FOMO_S_4	I feel ignored/forgotten by my social groups when I miss events/opportunities.	
Investment FOMO (FOMO_I)		

FOMO_I_1	I believe I am falling behind compared with others when I miss investment opportunities.	Gerrans et al. (2023); Przybylski et al. (2013); Zhang, Jiménez, and Cicala (2020)
FOMO_I_2	I think I do not fit in social groups when I miss investment opportunities	
FOMO_I_3	I feel regretful about missing investment opportunities.	
FOMO_I_4	It bothers me when I miss an opportunity to buy or sell a profitable stock.	
FOMO_I_5	I feel sad if I am not capable of participating in investing due to constraints of other things.	
FOMO_I_6	I get anxious when I don't know what's happening in the stock market.	
FOMO_I_7	When I make a good investment, I feel the urge to share it with others (e.g., on forums or social media).	
FOMO_I_8	Even when I am on vacation, I keep checking stock prices or financial news.	
Direct investment FOMO (FOMO_DI)		
To what extent do you fear missing out on the financial returns on the following investment opportunities if you don't invest in them ?		
FOMO_DI_1	Stocks	Gerrans et al. (2023); Zhang, Jiménez, and Cicala (2020)
FOMO_DI_2	Corporate bonds	
FOMO_DI_3	Fund certificate	
FOMO_DI_4	Certificate of deposit	
FOMO_DI_5	Other securities	
Financial literacy (FL)		
FL_1	I understand how interest rates affect the growth of money in a savings account.	OECD/INFE (2022)
FL_2	I understand how compound interest increases the value of money over time.	
FL_3	I understand how inflation affects my savings and investments.	
FL_4	I know that inflation reduces the purchasing power of money over time.	
FL_5	I understand that diversifying investments helps reduce overall risk.	Knoll & Houts (2012); Lusardi & Mitchell (2011)

FL_6	I understand that higher-risk investments generally offer the potential for higher returns.	OECD/INFE (2022)
FL_7	I know that mutual funds allow investors to pool money to buy diversified portfolios.	
FL_8	I understand the difference between stocks and bonds.	Knoll & Houts (2012)
FL_9	I feel confident in my ability to make financial decisions for myself.	Hung et al. (2009); OECD/INFE (2022)
Direct financial literacy (DFL)		
DFL_1	I do not share my bank account password or PIN with close friends.	OECD (2024)
DFL_2	Before purchasing a financial product online, I check whether the provider is licensed in my country.	
DFL_3	I do not publicly share my personal financial information online (e.g., on social media).	
DFL_4	I regularly change passwords for websites used for online shopping and personal finance.	
DFL_5	I use different passwords for financial and non-financial accounts (e.g., online banking, email, social media, e-commerce).	
DFL_6	I create strong passwords (e.g., using letters, numbers, capital letters, and special characters).	
DFL_7	I check the security of a website before making online transactions (e.g., https, security logos, certificates).	
DFL_8	I make digital payments using mobile applications.	
DFL_9	I make digital payments using a computer.	
DFL_10	I can identify financial scams on social media or email.	
DFL_11	I purchase financial products entirely online using a digital signature.	
DFL_12	I take appropriate measures to protect my personal financial data online.	
Overconfidence Bias (OB)		
OB_1	Investment decisions on selected stocks are the right choice in investing.	Adielyani and Mawardi (2020)
OB_2	Very confident that the ability possessed can help choose a good investment for the future.	

OB_3	Very confident that the knowledge possessed can help choose a good investment for the future.	
OB_4	Very confident that the investment decision on the selected stock is very useful for the future.	
Herding Bias (HB)		
HB_1	Another investor's decision to buy and sell shares has an impact on investment decisions.	Adielyani and Mawardi (2020)
HB_2	The number of certain shares traded by other investors influences investment decisions.	
HB_3	The decision of other investors to see the volume of stock trading has an impact on investment.	
HB_4	React quickly to changes in other investors' decisions.	

D. Research Methodology

The study analyzed the relationships between the variables in the proposed research model using a method known as Structural Equation Modeling (SEM), which is based upon a technique called Partial Least Squares (PLS). In social and behavioral sciences alike, researchers commonly utilize SmartPLS as their preferred software to conduct analysis of this type of data.

By employing the PLS-SEM method to evaluate the overall psychometric properties of both the measurement model and the structural model, researchers examined the reliability, convergent validity, discriminant validity, and the significance of relationships between the latent variables in the current study. Researchers often utilize the PLS-SEM method when conducting exploratory studies or when developing models that contain multiple constructs (Hair et al., 2017).

IV. RESULTS AND DISCUSSION

A. The Examination of the Measurement Model

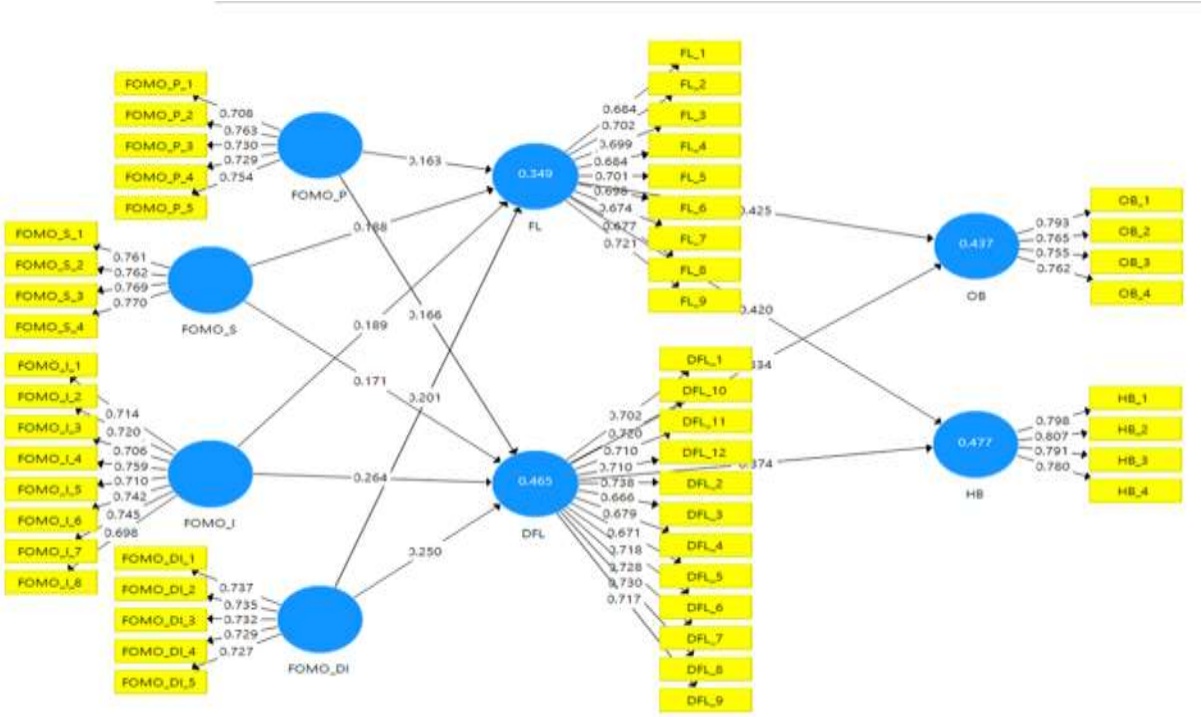


Figure 2: Outer Loading Value (first PLS-SEM run)

According to **Figure 2,** almost all outer loading coefficients are above 0.7, indicating that the observed variables meet the reliability requirements of the scale (Hair et al., 2017). However, some variables are still smaller than 0.7 and need to be removed in order from smallest to largest and are not considered significant in the overall questionnaire. Remove DFL_3, DFL_4, DFL_5 and FL_1, FL_7, FL_8; FOMO_I8; Then run a second time again.

Table 3: Outer Loading Value (second PLS-SEM run).

	DFL	FL	FOMO_DI	FOMO_I	FOMO_P	FOMO_S	HB	OB
DF_1	0.716							
DF_10	0.729							
DF_11	0.717							
DF_12	0.720							
DF_2	0.750							
DF_6	0.725							
DF_7	0.732							
DF_8	0.741							
DF_9	0.730							
FL_2		0.728						
FL_3		0.727						
FL_4		0.712						
FL_5		0.726						
FL_6		0.709						
FL_9		0.742						
FOMO_DI_1			0.737					
FOMO_DI_2			0.736					
FOMO_DI_3			0.731					
FOMO_DI_4			0.728					
FOMO_DI_5			0.727					
FOMO_I_1				0.721				
FOMO_I_2				0.731				
FOMO_I_3				0.713				

FOMO_I_4				0.767				
FOMO_I_5				0.712				
FOMO_I_6				0.748				
FOMO_I_7				0.757				
FOMO_P_1					0.708			
FOMO_P_2					0.763			
FOMO_P_3					0.731			
FOMO_P_4					0.731			
FOMO_P_5					0.752			
FOMO_S_1						0.760		
FOMO_S_2						0.761		
FOMO_S_3						0.770		
FOMO_S_4						0.770		
HB_1							0.797	
HB_2							0.806	
HB_3							0.792	
HB_4							0.780	
OB_1								0.791
OB_2								0.765
OB_3								0.757
OB_4								0.763

The outer loadings results show that all observed variables have loading coefficients greater than 0.7, meeting the requirements for convergent reliability. This demonstrates that the observed variables have a high degree of correlation with the latent factor they represent and are capable of providing good explanations for the conceptual structures in the research model. At the same time, no observed variables with low loading coefficients needed to be removed from the model. Thus, the model achieves good convergent validity, reflecting a good fit between the observed variables and the measured factors.

Testing for Reliability and Convergent Validity

Table 4: Construct Reliability and Validity with the second run

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)

FOMO_P	0.775	0.778	0.856	0.597
FOMO_I	0.868	0.869	0.896	0.520
FOMO_DI	0.796	0.800	0.859	0.550
FOMO_S	0.735	0.735	0.834	0.557
FL	0.894	0.895	0.917	0.612
DFL	0.924	0.925	0.937	0.622
HB	0.767	0.768	0.851	0.589
OB	0.751	0.752	0.842	0.572

Tests were made on the research model using multiple indicators including Cronbach's Alpha, rho_A, Composite Reliability (CR), and Average Variance Extracted (AVE). According to Hair et al. (2017), the scale can be considered reliable if the values for Cronbach's Alpha and Composite Reliability are greater than 0.7; and the AVE value must be greater than 0.5 to provide support for the convergent validity of the scale. The analysis results contained in **Table 4** show that all of the scales have a Cronbach's Alpha greater than 0.7, indicating that the observed variables have good internal consistency. Simultaneously, the Composite Reliability of the scales ranges from 0.834 to 0.937, exceeding the required threshold of 0.7, demonstrating high reliability.

In addition, the AVE values of all variables are greater than 0.5 (ranging from 0.520 to 0.622), indicating that the observed variables explain most of the variance of the latent variable, thereby ensuring the convergent validity of the scale. Therefore, the analysis results show that the scales in the research model all meet the requirements for reliability and convergent validity, and therefore can be further used to analyze the structural model and test research hypotheses in the next steps.

Test for Discriminant Validity

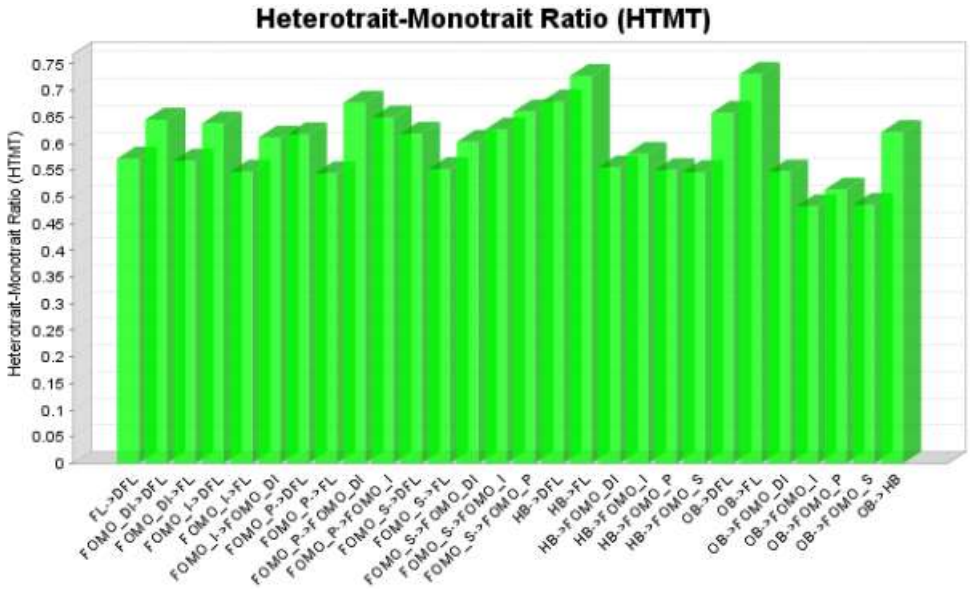


Figure 3: Heterotrait-Monotrait Ratio with the second run

The Heterotrait-Monotrait Ratio (HTMT) test results show that all HTMT values among the latent variables are less than the threshold of 0.85. This demonstrates that the scales achieve discriminant validity as recommended by Henseler et al. (2015). Therefore, the first-order variables ensure discriminant validity and qualify for the construction of second-order variables in the subsequent research model.

B. Research results

In this study, the FOMO variable is constructed as a quadratic variable, reflecting the level of fear of missing out on opportunities among investors in the stock market. FOMO is made up of four first-order components; they are Personal FOMO, Social FOMO, Investment FOMO, and Direct Investment FOMO. Quadratic variables were created to give a more accurate representation of the psychology involved in how investors behave in the market.

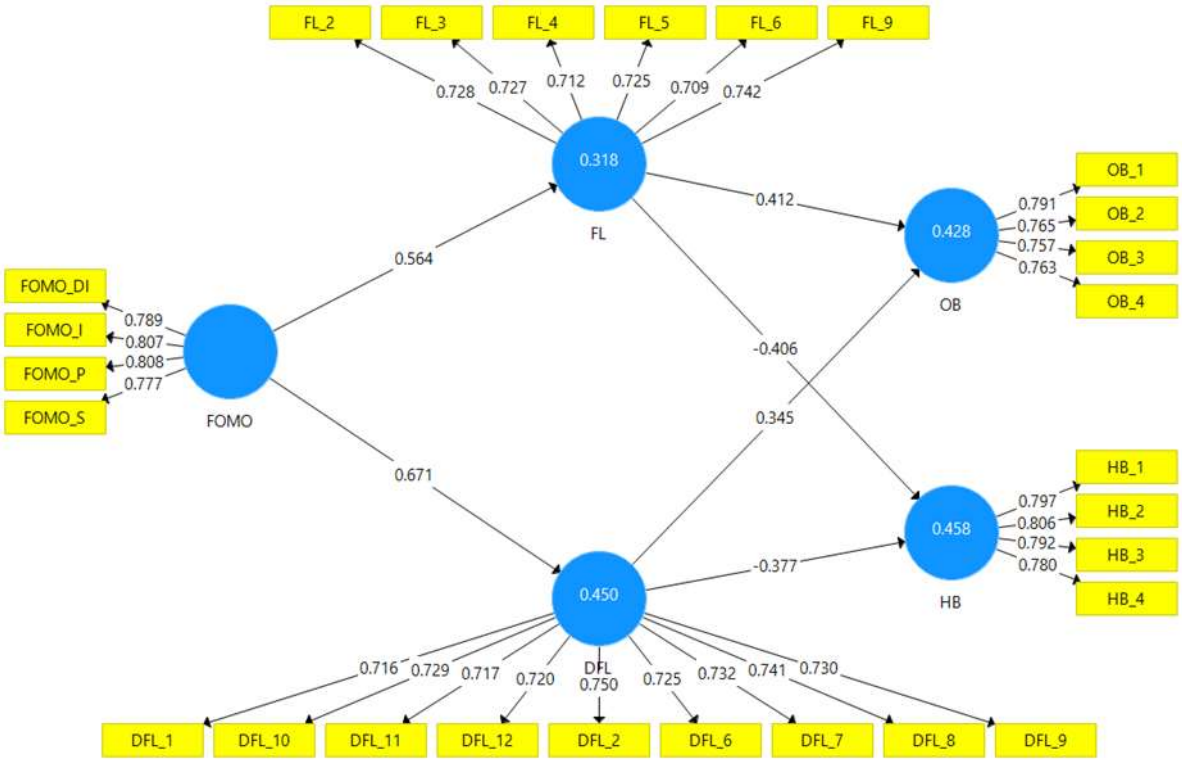


Figure 4: Outer Loading Value for the Second-Order Construct FOMO

These first-order variables are sufficiently representative of the second-order (FOMO) variable because none of them has an outer loading of less than 0.7. Because all of the observed variables meet the minimum outer loading for inclusion; and therefore, no variables need to be eliminated from the measurement model; thus, the measurement model demonstrates good convergence. Therefore, it can be concluded that the combination of the components of FOMO into a second-order variable is statistically valid.

Testing for reliability and validity

Table 5: Reliability validity

Variables	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
FOMO	0.838	0.839	0.892	0.673
FL	0.894	0.895	0.917	0.612
DFL	0.924	0.925	0.937	0.622
HB	0.767	0.768	0.851	0.589
OB	0.751	0.752	0.842	0.572

The Alpha, rho_A, and Composite Reliability indices all reached values over 0.7, demonstrating good stability and reliability of FOMO as a quadratic variable. The AVE values also met requirements for convergent validity, as they exceeded 0.5; therefore,

FOMO does significantly explain the variance of each associated component. These findings support the appropriateness of defining FOMO as a quadratic variable and provide ample evidence for the use of these scales in the structural model analysis.

Discriminant validity test

Table 6: Heterotrait-Monotrait Ratio (HTMT)

	Heterotrait-Monotrait Ratio (HTMT)
FOMO ↔ FL	0.693
FOMO ↔ DFL	0.790
FOMO ↔ HB	0.700
FOMO ↔ OB	0.635
FL ↔ DFL	0.572
FL ↔ HB	0.728
FL ↔ OB	0.731
DFL ↔ HB	0.680
DFL ↔ OB	0.658

According to the model, HTMT values range from 0.572 to 0.790. The highest value, which is 0.790, occurred between DFL and FOMO. Other pairs included FL and OB (0.731), FL and HB (0.728), or FOMO and HB (0.700). Though these values are all quite close together, they remain acceptable under the guidelines set forth; therefore, it can be stated that the HTMT value confirms both the correlation of concepts within the theoretical framework of this research as well as that sufficient levels of discriminant validity exist to support the proposed hypotheses.

Conversely, some pairs of variables with lower HTMT values such as DFL and FL (0.572) or FOMO and OB (0.635) show clear differences between constructs, further reinforcing the independence of the variables in the model.

Overall, no pair of variables had discriminant values exceeding the prescribed threshold, therefore, it can be concluded that the constructs in the study achieved good discriminant validity.

Hypothesis Testing

The study tested its hypotheses with the help of structural equation modeling (SEM) by considering the Path Coefficient (β), T-Statistics, and Probabilistic Significance (P-value). The path coefficients for all paths from the model tested were statistically significant at $P < 0.005$.

Table 7: Results of Hypothesis Testing

Hypothesis	**Path coefficients (β)**	**T-statistics**	**P-value**
H1: FOMO → FL	0.564	23.884	0.000
H2: FOMO → DFL	0.671	37.361	0.000
H3: FL → OB	0.412	13.577	0.000
H4: FL → HB	-0.406	14.817	0.000
H5: DFL → OB	0.345	11.421	0.000

H6: DFL → HB	-0.377	13.591	0.000

According to the results of empirical studies, there is a strong relationship between FOMO and both FL with β = 0.564 (t = 23.884) and DFL with β = 0.671 (t = 37.361). These results mean that H1 and H2 are totally supported by the study's results.

The results of this study also support the theories presented in the research overview, particularly with regard to the Vietnamese market context. When an investor fears they may miss out on a potential investment opportunity, they begin to drive themselves to gather as much information as possible about that investment opportunity so they have the best possible understanding of how that investment could contribute to their financial situation; therefore, the stronger relationship between FOMO and DFL indicates the ability of FOMO to motivate an investor to quickly connect with technology-based platforms or online communities throughout the digital age.

The research on cognitive ability and behavioral biases shows the following:

With Herding Bias: both FL (β = -0.406) and DFL (β = -0.377) exhibit a negative effect. These findings align with Lusardi and Mitchell (2014) and other empirical studies. Therefore, this suggests that improvement in financial literacy and digital skills empowers individual investors to analyse independently and therefore restrict the herding behaviour. In Vietnam, this shows that financial education is a valuable tool to assist individual investors avoid psychological market "frenzy", thus supporting H4 and H6.

In respect to Overconfidence Bias, FL (β = 0.412) and DFL (β = 0.345) produce a positive correlation with OB, supporting H3 and H5. The results illustrate some characteristics of an emerging market (Vietnam) where investors will have accumulated experience and experience with using analytical mappings, creating an increased sense of control and confidence in their ability to predict and control the markets. Therefore, with limited actual experience, any increase in confidence typically results in overconfidence in making risk taking decisions regarding their investments.

The study also highlights the impact of FL and DFL on HB through their mediation of the relationship between FOMO and Investor Behaviour. While a negative indirect effect of FOMO on Herding Bias (FOMO → FL/DFL → HB) suggests that FOMO may motivate investors to develop their financial literacy, which through the knowledge gained, will act as a 'filter' for preventing investors from blindly following other investors, the positive indirect effect of FOMO on Overconfidence Bias (FOMO → FL/DFL → OB) suggests that the mass of information available to investors will inadvertently contribute to their own sense of overconfidence in their analytical abilities when FOMO pressure is applied to them. Thus, this study provides an in-depth understanding of how psychological and cognitive factors intersect and how they affect the overall behaviour of individual investors in Vietnam's current environment.

Coefficient of Determination (R^2) for Investment Behavior

Table 8: Coefficient of Determination (R^2)

Variables	**R Square**
DFL	0.450
FL	0.318
HB	0.458
OB	0.428

FOMO is not only a stressor but also a motivating force for investors in the Vietnamese market to enhance their learning and capability in finance by demonstrating that it accounts for 45% of the variance in digital financial literacy as well as 31.8% of financial literacy. Regarding behavioural biases (HB and OB), the FL and DFL factors can explain 45.8% of the variance in herding bias and 42.8% in overconfidence bias. The greatest explanatory factor of variance in these data is HB, as evidence indicates that cognitive ability is a significant factor in restricting investor herd mentality.

Based on Cohen's (2013) specifications, an R^2 value of approximately 0.26 is classified as an intermediate level of fit, while an R^2 value greater than 0.40 would reflect a reasonably good level of fit; hence, because the model produced R^2 between 0.318 and 0.458, this indicates that the model adequately represented the influence of FOMO and financial literacy on the behavior of individual investors in Vietnam and is considered practically significant.

C. Discussion

Findings indicate there is an empirical basis behind the interdependence between psychology and cognition as it relates to individual's investment actions. Some examples include how having a sense of FOMO gives a person more motivation to learn (FL and DFL) than would have been the case if they did not experience FOMO. This is especially true in the current state of the digital marketplace since digital information and financial transactions can happen very quickly which forces an investor to keep their financial knowledge updated on an ongoing basis.

Second, FL and DFL have two opposite relationships with HB and OB. That is, when comparing FL to HB, and when comparing DFL to HB, both FL and DFL have a negative relationship, suitable for previous studies (Lusardi and Mitchell, 2014) and therefore contribute to investor's ability to develop their financial analysis skills and become better independent analysts. Conversely, both FL and DFL have a positive relationship with OB, and therefore, once a person develops some familiarity/knowledge about a particular subject (e.g., investing), they tend to think they are really good at it. Knowledge is not always the cause of a person making a rational decision.

In summary, research has shown that money management education should add behavioral education to complement the knowledge component and help people identify their own biases in making investing decisions. Enforcement mechanisms by regulatory authorities and trading platforms also need to work together to control the amount of information available that could create FOMO and thereby reduce emotional decision making.

Ultimately, the model's proportionate explanatory ability, ranging between moderate and superior (with R^2 levels calculated from 0.318 to 0.458) confirms both statistical reliability and credibility of this study as a basis for furthering understanding of how individual investors behave within Vietnam, thus serving to build on prior research involving behaviour finance in emerging market countries.

V. CONCLUSION

The authors wanted to understand the interplay among the psychological condition of FOMO (fear of missing out), the cognitive ability for making financial decisions, and the biases exhibited by individual investors when trading on the Vietnamese Stock Market. The researchers used PLS-SEM (Partial Least Squares Structural Equation Modeling) to test their hypotheses by analyzing data from 800+ valid survey responses. They found empirical evidence confirming that financial knowledge and mental factors interact and determine how an individual investor makes their investments today. The results of their empirical analysis confirm that the structural model exhibits excellent explanatory power with R2 ranging from 0.318 – 0.458; thus, a large component of overall variance in investor bias is caused by the interaction of cognitive competency and psychological factors.

Research results indicate that FOMO serves as an endogenous driver for investors to build their FL and DFL; but that the accumulation of these two types of knowledge will, however, create nuances in how they affect investors once they accumulate this knowledge. FL and DFL will help to significantly reduce investors' chance of exhibiting Herding Bias (HB) because they provide investors with independent processing of information, while at the same time increasing the chances that they will exhibit Overconfidence Bias (OB), which is consistent with behavioural theories that describe people as overestimating their skill at predicting the future as they gain more knowledge, particularly in highly digitalised environments (Lusardi & Mitchell, 2007), which yields a "knowledge paradox" (Fernandes et al., 2014) where the tools intended to protect investors from substantial risks that they take, end up leading investors to take on big risks in combination with an inflated sense of competence.

In light of these results, this study has developed an optimal behavioral model that is suited to the Vietnamese marketplace. For individual investors to succeed within this environment requires both the acquisition of technical knowledge as well as behavioral self-regulation, as an effective means of avoiding being trapped by overconfidence. Investors must also move from being "reactive" learners because they fear missing out (FOMO) on big profits, toward proactively acquiring knowledge following a systematic process that meets established risk management practices. For brokerage firms and regulators, instead of concentrating on simply creating new accounts, they should be focused on creating "quality participants" in the marketplace; therefore, training programs for brokerage firms must incorporate content from Behavioral Finance that educates investors about psychological pitfalls rather than simply teaching them technical forms of analysis. Finally, trading platforms should utilize "behavioral nudges" by providing real-time alerts when markets are in an extreme psychological state to help control the impulsivity caused by FOMO (Barberis et al., 1998).

While this study has made many important contributions, there are various limitations in its scope. One such limitation is the reliance on online surveys as the only means of collecting data, which may introduce geographical bias. This bias would reflect primarily the behaviour of technology-oriented investors living in the major urban centres. Future studies should broaden their sample sizes to represent a more varied and diverse population to improve upon the generalizability of the results obtained.

Another limitation of this research relates to investor psychology and the fact that it can change dramatically depending on economic conditions (the so-called bull vs. bear market cycles). Changing the research methodology from a cross-sectional design to a longitudinal design will produce a deeper understanding of how the effects of financial illiteracy and FOMO evolve throughout the different stages of market conditions. Finally, additional moderating variables that impact digital investors, such as personality traits or macroeconomic conditions, should be examined in greater detail to provide an even clearer insight into what motivates digital investors from emerging economies.

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REFERENCES

1) Adielyani, D., & Mawardi, W. (2020). The influence of overconfidence, herding behavior, and risk tolerance on stock investment decisions: The empirical study of millennial investors in Semarang City. *Jurnal Maksipreneur: Manajemen, Koperasi, Dan Entrepreneurship, 10*(1), 89-101. Retrieved from https://ejournal.up45.ac.id/index.php/maksipreneur/article/view/691/556
2) Baker, M., & Wurgler, J. (2007). Investor sentiment in the stock market. *Journal of economic perspectives, 21*(2), 129-151 https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.21.2.129
3) Banerjee, A. V. (1992). A simple model of herd behavior. *The quarterly journal of economics, 107*(3), 797-817. https://doi.org/10.2307/2118364
4) Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The quarterly journal of economics, 116(*1), 261-292. https://doi.org/10.1162/003355301556400
5) Barberis, N., Greenwood, R., Jin, L., & Shleifer, A. (2018). Extrapolation and bubbles. *Journal of Financial Economics, 129*(2), 203-227. https://doi.org/10.1016/j.jfineco.2018.04.007
6) Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. *Journal of Financial Economics, 49*(3), 307–343. https://doi.org/10.1016/S0304-405X(98)00027-0
7) Barberis, N., & Thaler, R. (2003). A survey of behavioral finance. *Handbook of the Economics of Finance, 1*, 1053-1128. https://doi.org/10.1016/s1574-0102(03)01027-6
8) Becker, G. S. (1983). A Theory of Competition Among Pressure Groups for Political Influence. *The Quarterly Journal of Economics, 98*(3), 371. https://www.jstor.org/stable/1886017?origin=JSTOR-pdf
9) Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. routledge. Retrieved from https://api.taylorfrancis.com/content/books/mono/download?identifierName=doi&identifierValue=10.4324/9780203771587&type=googlepdf
10) Devenow, A., & Welch, I. (1996). Rational herding in financial economics. *European economic review, 40*(3-5), 603-615. https://doi.org/10.1016/0014-2921(95)00073-9
11) Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). Financial Literacy, Financial Education, and Downstream Financial Behaviors. *Management Science, 60*(8), 1861–1883. https://www.jstor.org/stable/42919641
12) Festinger, L. (1954). A theory of social comparison processes. *Human relations*, 7(2), 117-140. https://journals.sagepub.com/doi/abs/10.1177/001872675400700202
13) Gerrans, P., Abisekaraj, S. B., & Liu, Z. F. (2023). The fear of missing out on cryptocurrency and stock investments: Direct and indirect effects of financial literacy and risk tolerance. *Journal of Financial Literacy and Wellbeing, 1*(1), 103-137. https://doi.org/10.1017/flw.2023.6
14) Graham, B., & Dodd, D. L. (2018). *Phân tích chứng khoán*. NXB Lao Động. Retrieved from https://thuvienso.org/tai-pdf-phan-tich-chung-khoan-security-analysis-pdf
15) Hair, J., Tomas, G., Hult, M., Ringle, C., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) Second Edition*. Retrieved from https://eli.johogo.com/Class/CCU/SEM/_A%20Primer%20on%20Partial%20Least%20Squares%20Structural%20Equation%20Modeling_Hair.pdf
16) Hastings, J. S., Madrian, B. C., & Skimmyhorn, W. L. (2013). Financial literacy, financial education, and economic outcomes. *Annu. Rev. Econ.*, *5*(1), 347-373. https://doi.org/10.1146/annurev-economics-082312-125807
17) Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, *43*(1), 115-135.

https://link.springer.com/article/10.1007/s11747-014-0403-8

18) Hung, A., Parker, A. M., & Yoong, J. (2009). *Defining and measuring financial literacy*. RAND Corporation. https://www.rand.org/pubs/working_papers/WR708.html
19) Kahneman, D., & Tversky, A. (2013). Prospect theory: An analysis of decision under risk. In *Handbook of the fundamentals of financial decision making: Part I* (pp. 99-127). https://www.worldscientific.com/doi/abs/10.1142/9789814417358_0006
20) Knoll, M. A. Z., & Houts, C. R. (2012). *The Financial Knowledge Scale*. *Journal of Consumer Affairs*, 46(3), 381–410. https://doi.org/10.1111/j.1745-6606.2012.01241.x
21) Lusardi, A., & Mitchell, O. S. (2007). Financial literacy and retirement planning: New evidence from the Rand American Life Panel. *Michigan Retirement Research Center Research Paper No. WP, 157*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1095869
22) Lusardi, A., & Mitchell, O. S. (2011). Financial literacy around the world: *An overview. Journal of Pension Economics and Finance*, 10(4), 497–508. https://doi.org/10.1017/S1474747211000448
23) Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: *Theory and evidence. Journal of economic literature, 52*(1), 5-44. https://www.aeaweb.org/articles?id=10.1257/jel.52.1.5
24) Mahendra, R. and Eko Purwanto (2023). The Impact of Financial Literacy, Overconfidence Bias, Herding Bias and Loss Aversion Bias on Investment Decision. *Indonesian Journal of Business Analytics,* 3(5), pp.1873–1886. https://doi.org/10.55927/ijba.v3i5.5715
25) OECD (2018), *G20/OECD-INFE Policy Guidance on Digital Financial Literacy*, OECD Publishing, Paris. https://doi.org/10.1787/effe2693-en
26) OECD (2022). *Toolkit for Measuring Financial Literacy and Financial Inclusion*. OECD Publishing, Paris. https://doi.org/10.1787/cbc4114f-en
27) OECD (2024), *OECD/INFE survey instrument to measure digital financial literacy*, OECD Publishing, Paris. https://doi.org/10.1787/548de821-en
28) Przybylski, A. K., Murayama, K., DeHaan, C. R., & Gladwell, V. (2013). Motivational, emotional, and behavioral correlates of fear of missing out. *Computers in human behavior, 29*(4), 1841-1848. https://doi.org/10.1016/j.chb.2013.02.014
29) Shefrin, H. (2002). *Beyond greed and fear: Understanding behavioral finance and the psychology of investing*. Oxford University Press.
30) Thakor, A. V. (2020). Fintech and banking: What do we know?. *Journal of financial intermediation, 41*, 100833. https://doi.org/10.1016/j.jfi.2019.100833
31) Vietnam Securities Depository (VSCD). (2021). *Annual Report 2021*. Retrieved from https://vsd.vn:9994/VSD_PORTAL//ckeditor/145/oY7bA_VSD_AR2021%20-%20web.pdf
32) Wyman, O. (2017). *Accelerating financial inclusion in South-East Asia with digital finance*. Asian Development Bank. https://www.adb.org/publications/financial-inclusion-south-east-asia-digital-finance
33) Zhang, Z., Jiménez, F. R., & Cicala, J. E. (2020). Fear of missing out scale: A self-concept perspective. *Psychology & Marketing, 37*(11), 1619-1634. https://onlinelibrary.wiley.com/doi/10.1002/mar.21406

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