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Nexus between Financial Education, Literacy, and Financial Behavior: Insights from Vietnamese Young Generations

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Abstract: This study examines the relationship between financial education, financial literacy, and financial behavior among young Vietnamese adults. Based on survey data from over 1000 participants, this study measures financial literacy through objective and subjective knowledge and financial ability. Financial behavior is assessed in terms of short-term behaviors (emergency funds, spending, overdraft, and budgeting) and long-term behaviors (retirement planning, having a retirement account, investment, and setting financial goals). Logistic and ordered logistic regression models are employed to analyze the data. The findings indicate a significant difference in financial behavior between individuals who have received financial education and those who have not. This study also reveals that financial literacy has a negative impact on short-term financial behaviors but a positive effect on long-term financial behaviors. This novel finding highlights the importance of considering different time horizons when examining the interplay between financial literacy and behaviors. The insights from this study hold implications for policymakers, educators, and financial institutions in developing countries like Vietnam, as they can inform the design of effective financial education programs. Ultimately, this research contributes to enhancing the financial well-being of young adults and supporting the country's overall economic growth.

Keywords: financial literacy; financial education; financial behavior; young adults; developing countries; financial inclusion

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1. Introduction

Financial education plays a crucial role in today's modern world, serving as a vital tool for achieving success in life and making informed decisions regarding financial matters [1]. In particular, developing strong financial skills is essential for the sustainability of families and society. When individuals possess sound financial knowledge and skills, they can effectively manage their finances, leading to stability and well-being within their families. Additionally, strong financial skills contribute to economic growth and stability at the societal level. By making informed decisions about budgeting, saving, and investing, individuals can prioritize financial goals, avoid excessive debt, and navigate financial challenges. This not only protects their own financial well-being but also reduces reliance on social welfare programs and promotes economic productivity. Overall, promoting financial education and literacy is crucial for creating financially resilient families and sustainable societies.

However, the level of financial literacy in Vietnam is significantly lower than the average of 30 economies in the OECD/INFE [2]. Despite efforts to include personal financial education in the general curriculum and make it accessible in educational settings [3], young people in Vietnam still lack sufficient financial knowledge and skills. This lack of awareness about debt can potentially lead to financial difficulties, highlighting the need for appropriate policies and curriculum designs to improve access to financial instruments and enhance

financial literacy [4]. Furthermore, the increasing introduction of new financial products has created a demand for financial literacy. The complex financial landscape necessitates educators and policymakers to emphasize the significance of financial education [5].

Despite some conflicting findings in previous studies regarding the impact of financial education, there remains a limited understanding of the causal relationship between education, literacy, and behaviors, particularly in Vietnam. Therefore, conducting a study on the impact of financial education and financial literacy on financial behaviors among young individuals in Vietnam is crucial.

By addressing these gaps in research, we contribute to the existing literature by analyzing how financial education and financial literacy affect long-term and short-term financial behaviors of young individuals in Vietnam. Additionally, this study seeks to identify ways to support practical and relevant financial education for students in Vietnam.

By focusing on young adults aged 18–25, this study recognizes the importance of this life stage in shaping financial behaviors. Understanding the factors that influence financial behaviors during this stage can inform targeted interventions and support young individuals in making sound financial decisions. By collecting data from over 1000 young adults in Vietnam through a survey questionnaire, our study ensures a diverse representation of different study fields and genders. Once the data are collected, statistical methods such as *t*-tests, numerical integrated reliability system analysis, binary regression models, and ordinal binary regression models are utilized to investigate the nexus between financial education, financial literacy, and financial long-term and short-term behaviors.

Ultimately, analyzing the impact of financial education and literacy on the financial behaviors of young individuals in Vietnam is crucial for both Vietnam's development and global efforts to promote financial education and sustainability. By addressing the specific challenges faced by this age group and considering the socioeconomic context of the country, this research provides insights for policymakers and educators to design targeted interventions, improve financial literacy levels, promote responsible financial behaviors, promote financial well-being, and drive economic development in Vietnam. Additionally, lessons learned from Vietnam can inform global initiatives, helping other countries facing similar challenges to enhance financial literacy and drive sustainable economic growth [6]. By equipping young individuals with strong financial education and literacy skills, we empower them to make informed financial decisions and contribute to a more sustainable future, benefiting both Vietnam and the global community.

Our study is structured into five sections. Following Section 1, we provide a literature review in Section 2 and introduce the research methodology and data in Section 3. Section 4 is dedicated to discussing the research findings before the conclusion in Section 5.

2. Literature Review

The literature on financial theories, particularly financial literacy and education, is rapidly expanding [7–9]. The lack of financial literacy leads to poor financial decision making, negatively affecting personal and global financial well-being [10]. Therefore, improving financial education and literacy is crucial. According to the OECD [11], financial literacy instruction should start in schools, and individuals should be encouraged to learn about financial matters as early as possible. Financial subjects are also integrated into the general curriculum of high schools and universities [12], as well as in workplace settings in many countries [13].

2.1. Financial Behaviors

During the past thirty years, extensive research has been conducted by consumer economists on the subject of financial behavior. Financial behavior encompasses any actions or decisions related to the management of money, including handling cash, utilizing credit, and saving habits. Recent research has highlighted various financial behaviors in different contexts [14–17]. In this article, we classify financial behavior into two distinct groups:

short-term financial behavior, which encompasses spending and emergency savings, and long-term financial behavior, which involves investing and saving for retirement.

Numerous studies have examined young age groups to understand their financial behaviors [18,19]. Comparisons between these groups have been made to highlight their differences [20]. Researchers often generalize to identify key attributes of each age group [21,22]. For example, Generation Y (born between 1982 and 1999) has been described as having traits that may influence their attitudes and behaviors towards money, such as a higher self-esteem, narcissism, a greater external locus of control, and reduced dependence on social acceptance compared to older generations [22]. To gain a deeper understanding of young adults who are expected to have a significant impact on future economic development, our study specifically focuses on this generation as the targeted research subjects. We are particularly concerned about young adults aged 18–24 with low levels of financial knowledge [23]. This life stage is crucial as individuals make important decisions regarding education, career, and relationships, many of which have long-term financial implications [24].

2.2. Financial Education and Young Generation's Financial Behavior

In the 1950s, many studies on financial education operated under the assumption that individuals could effectively manage their finances by reducing expenses, leading to proficiency in handling financial issues [25–28]. However, this perspective needs to be frequently updated. With the increasing popularity of saving, investing, and retirement planning, there is a significant gap between theory and reality.

Previous research suggests that providing formal financial education to high-school and college students is a practical approach to improving financial literacy [1,29–33]. Gentina et al. [34] also support these findings, demonstrating that individuals with financial education can achieve a 40% difference in final wealth. In other words, financial education benefits individuals in the short and long term. According to Peng et al. [35], financial education obtained at college has a substantial connection with financial investment.

However, Mandell and Klein [36] discovered no significant difference in financial literacy and behavior between those who took financial classes and those who did not. Similarly, Cole et al. [37] discovered only a minor impact of financial education, as attending financial courses did not significantly increase the use of banking or financial accounts.

The younger cohort confronts a range of financial obstacles. Jiang and Dunn [38] unearthed that individuals in their early adulthood experience elevated levels of indebtedness, heavily depend on credit cards, and tend to repay debts at a slower rate due to stagnant incomes, limited earnings, and the weight of educational expenses. They further propose that increased availability of credit and a more lenient attitude towards debt could contribute to the financial challenges encountered by young people.

Empirical research conducted by Brown et al. [31] demonstrated that young people who received state-mandated financial education courses during their schooling had slightly higher credit scores and reduced delinquency rates compared to people in jurisdictions where such rules do not exist. Similarly, Kaiser and Menkhoff [39] identified the average impact of educational programs on the financial behavior of young individuals. However, research by Jing Jian Xiao, Cheng Chen, and Lei Sun [40] revealed that young individuals had the lowest financial literacy scores.

We offer the following hypothesis in light of the different effects of financial education on actual financial literacy:

H1. *There is a significant difference in financial behavior between individuals who have attended financial education programs and those who have not.*

2.3. Financial Literacy

In response to the complexities of the financial world, it is crucial for financial literacy programs to adapt quickly. However, an important question arises: What exactly is the definition of financial literacy? Alba and Hutchinson [41] define financial literacy

as a specialized form of consumer expertise that pertains to effectively managing one's financial affairs or as a type of human capital related to personal finances. Financial literacy examines an individual's comprehension of core financial concepts as well as their capacity to make informed short-term decisions, build long-term financial goals, and navigate life events and economic conditions [42]. Financial literacy also encompasses a person's knowledge and skills in making financial decisions and effectively utilizing financial tools and techniques [43,44].

People often have a significant discrepancy between their self-perceived knowledge and their actual knowledge, as measured by financial literacy questionnaires. In our study, we focus on two subjective components: subjective financial knowledge and subjective financial ability. Previous research has shown that objective and subjective financial knowledge are separate dimensions that have distinct impacts on an individual's financial behavior [45–47]. This indicates that even if two people have a comparable degree of objective financial knowledge, they might have distinct subjective assessments of their knowledge stages, culminating in different behavioral results.

Therefore, this study operationalizes financial literacy by considering three key components: objective financial knowledge, subjective financial knowledge, and subjective financial ability.

2.3.1. Objective Financial Knowledge

Objective financial information is considered a crucial factor in influencing financial behavior [48]. A number of investigations have been conducted to explore the association between objective financial knowledge and various financial behaviors. For example, research has found a link between objective financial knowledge and actions like retirement planning, stock investing, and accountability in financial behavior [49–53]. However, there is no consensus on the impact of objective knowledge, as some studies suggest that financial outcomes are not influenced by an objective perspective [54,55]

To measure objective financial knowledge, researchers commonly use true/false questions that assess basic financial concepts and computational skills [56,57]. Lusardi and Mitchell [58] identified three key topics that support individuals in making better financial decisions: interest calculation, understanding inflation, and risk diversification. However, given the complexity of the finance field, these three basic questions may not comprehensively evaluate individuals' awareness and skills [59]. As a result, Rieger [60] proposed a new method for measuring objective financial knowledge that combines the approach of Lusardi and Mitchell [1] with a set of questions developed by Ćumurović and Hyll [61]. This personal financial survey covers topics such as safe investments, interest rates, inflation, market fluctuations, and stock and investment funds.

2.3.2. Subjective Financial Knowledge

Subjective financial knowledge is another factor that influences financial behavior. It encompasses an individual's awareness and confidence in their financial knowledge, which can impact their information processing and differs from objective financial knowledge [62]. It was only in recent years that Rosen [63] provided a comprehensive definition of perceived financial knowledge as "confidence in every financial decision." Parker et al. [47] suggested that it refers to "one's ability to make decisions about personal finance", while Tang and Baker [48] described it as "what individuals believe they know"—a subjective assessment. Empirical studies and the findings of several papers document that the nexus between financial behavior and perceived financial knowledge can sometimes be stronger than the relationship with objective financial knowledge [48]. This perceived financial knowledge can lead to more significant changes in financial behavior [64], particularly in credit and loan activities [65].

There has been a question regarding whether individuals' self-assessment of their financial knowledge could be either lower or higher than what it should be. However, research by Allgood and Walstad [56] and Hadar, Sood, and Fox [66] helps us draw a

conclusion: perceived financial knowledge serves as the foundation that shapes individuals' confidence, and the level of assertiveness in their financial decisions amplifies the influence of perceived financial knowledge on financial behavior.

2.3.3. Subjective Financial Ability

Subjective financial ability, also known as perceived financial ability, is an important aspect of financial literacy. While financial knowledge forms the academic foundation of an individual's understanding, practical applicability is necessary to develop financial literacy. This practical aspect is reflected in one's ability and confidence in making decisions about personal finance, highlighting the subjective dimension of financial literacy.

Financial knowledge serves as the basis for individuals' knowledge and capacity, focusing on the academic side [67]. However, to truly enhance financial literacy, practical application is crucial. Huhmann [68] emphasizes that confidence in financial literacy supports decision making and actions related to finances. Furthermore, Lown [69] concludes that perceived financial ability helps consumers achieve financial freedom. Self-confidence plays a significant role in applying financial knowledge to everyday life. As a result, we reach a consensus to use the term "perceived financial ability" in this research to capture this subjective aspect of financial literacy.

2.3.4. Financial Literacy and Financial Behavior

Financial literacy has been linked to a variety of healthy financial practices, including prompt credit card debt repayment [56], retirement preparation [70], mortgage payments made on time [71], reducing credit card and mortgage loan costs [67], and maintaining precautionary savings [72]. Young individuals with financial knowledge and skills are more likely to make informed decisions and enjoy a higher quality of life [73]. Improving financial literacy can lead to better financial decision making, including retirement planning [1]. Individuals with low levels of financial literacy, on the other hand, are less likely to participate in the stock market [74,75]. If they do engage, they tend to make suboptimal decisions that can negatively impact their retirement savings.

Better investing performance has been linked to higher levels of objective financial knowledge [76], long-term financial practices such as savings and investments, and a decreased likelihood of using expensive and diverse financial products and services [77]. The financial knowledge of young people influences their savings actions. Chowa and Ansong [78] highlight the importance of young people's ability to save and acquire assets, as it impacts their ability to meet financial obligations and prepare for the future. Researchers have not only examined objective financial knowledge but have also explored the influence of subjective financial knowledge on financial behaviors. Objective financial knowledge was solely connected with responsible debt behaviors, whereas perceived financial knowledge was associated with investment behaviors no matter a person's degree of objective financial knowledge [56]. Henager and Cude [20] claimed that perceived financial knowledge had a larger link with short-term financial actions such as spending and emergency saving than objective financial knowledge. Additionally, Montford and Goldsmith [79] established a positive relationship between financial self-efficacy, which refers to an individual's belief in their ability to achieve financial goals, and willingness to take investment risks. However, certain studies have found an overconfidence effect in financial knowledge, in which people believe their financial knowledge is larger than their actual objective knowledge [76,77]. Research on stock market behavior and overconfidence suggests that individuals may take riskier positions in stocks because they believe they can accurately predict future stock prices [80,81]. Even when considering the objective need for such services, Robb et al. [77] found that individuals with higher levels of overconfidence in their financial knowledge were more likely to utilize high-cost alternative financial services. Additionally, researchers revealed that families with a high level of financial confidence showed a preference for direct equity investment rather than diversifying their investments through mutual funds [76]. Overconfidence in financial knowledge is also seen among

entrepreneurs who may overestimate their ability to launch a profitable business, leading them to enter industries with low chances of success [82]. However, financial knowledge confidence can enhance financial decisions or outcomes since confidence is often necessary to take action [83]. To improve financial behavior among young adults and reduce financial problems, financial education plays a crucial role [84]. Therefore, we propose the following hypotheses:

H2. *The level of financial literacy is linked to positive short-term financial behavior*;

H3. *The level of financial literacy is associated with positive long-term financial behavior*.

2.4. Demographic Factors and Financial Behavior

Research on financial capability has found that it is influenced by factors such as income, socioeconomic status, age, gender, and major [36,85]. Gender differences in financial aptitude have been observed, with males generally outperforming females [86,87]. Nevertheless, divergent results have emerged from other studies which indicated that there was no notable disparity between men and women in terms of financial literacy [88,89]. Moreover, researchers revealed that male students typically exhibit a higher level of knowledge regarding insurance and loans, whereas female students demonstrate a stronger comprehension of overall financial management [90]. Kempson et al. [91] found that women excel in short-term money management, while men perform better in areas like product selection and wealth accumulation. The choice of major also plays a role in financial capability, as business majors tend to have higher financial awareness, planning, and decision making skills compared to non-business students, likely due to their exposure to relevant topics [92,93].

In comparison to other age groups, young adults between the ages of 18 and 24 generally exhibit lower scores in objective financial literacy, subjective financial literacy, perceived financial capability, and the financial capability index [40]. However, meaningful changes occur during this stage of life [94]. When it comes to financial behaviors, young adults tend to be more acquainted with aspects such as budgeting, saving, and spending. However, skills associated with payment, borrowing, and investing may still be in the developmental stage for this age group. According to Henager and Cude [20], younger cohorts exhibit positive financial behaviors when they possess confidence and perceived knowledge, whereas older cohorts rely more on actual financial knowledge. In our research, we aim to examine the financial behaviors of young Vietnamese individuals aged 18–24 and determine whether financial literacy has an impact on these behaviors. We also aim to identify which components of financial literacy have the strongest influence on financial outcomes.

Figure 1 represents the research framework.

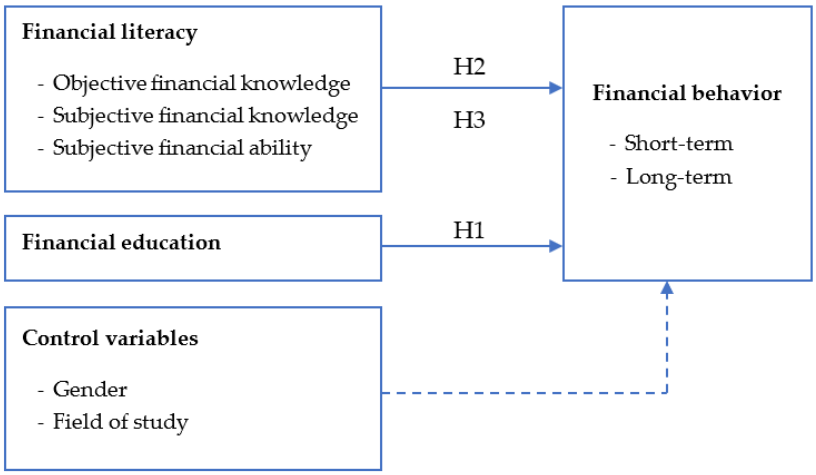

Figure 1. Research framework. Source: Authors' compilation, 2023.

3. Methodology

3.1. Data Collection

The participants in this study consisted of Vietnamese individuals, including students and adults. The survey was conducted online and offline from 1 March to 31 March 2023. We received 1045 responses, with 726 online and 319 offline. The primary focus of data collection was on young adults, particularly university students from diverse fields such as economics, pharmacy, engineering, education, arts, and more. They were either undergraduate or graduate students.

Participants were approached randomly through email invitations and social media platforms (Facebook, Zalo) for online surveys, while offline surveys were conducted at university campuses in Ho Chi Minh City. It was emphasized that participation was voluntary, and participants had the right to withdraw from the survey at any time. The introduction section of the questionnaire clearly stated the purpose of the study, the procedures involved, the voluntary nature of participation, and the expected duration. Respondents' personal information was not linked to their survey responses, and data were securely stored.

We validated the answers by checking completion rate, content validity, consistency, form validity, and random response. After removing any invalid responses, we obtained a final dataset of 1000 valid observations. To examine the influence of financial education and literacy on financial behaviors, we transformed each response into an appropriate scale, categorized activities as either short-term or long-term, and utilized this input data for analysis purposes.

According to Taro Yamane [95], the minimum sample size required for a study with 95% confidence, a success estimation rate of 0.5, and a permissible error of ± 0.05 is 385 individuals. According to Tabachnick and Fidell [96], we can calculate the minimum sample size needed for multiple-variable regression using n = 50 + 8x the number of independent variables. Our study had seven independent variables, so the minimum sample size was 106. Our study used data from 1000 young individuals, thus meeting the sample size requirements. With such a relatively large sample size, we could decrease the error margin and improve the estimation accuracy. Additionally, the estimates were more likely to represent the population, reducing the variability due to random sampling, which allowed us to draw more reliable conclusions from the data.

3.2. Research Variables

3.2.1. Financial Behaviors Measurement

By inheriting studies of Kim et al. [64] and Henager and Cude [20], we used two variables to measure financial behaviors: long-term and short-term financial behaviors, each consisting of four sub-behaviors (see Appendix A). In particular, short-term financial behaviors encompass four activities: emergency funds (SF1), spending (SF2), overdraft (SF3), and budgeting (SF4). Similarly, long-term financial behaviors include four activities: planning for retirement (LF1), having a retirement account (LF2), investment (LF3), and financial goals (LF4). The responses to these activities were yes or no, with a code of 1 assigned to "Yes" and 0 assigned to "No".

3.2.2. Financial Education Measurement

Financial education indicated whether the respondent had participated in a financial education program provided by their institution or workplace. This variable was measured using a binary scale, where 1 represented "yes" and 0 represented "no". The question used to capture this information ("Have you received financial education from school/work?") was derived from the National Financial Capability Study (NFCS) 2015, conducted by the US Financial Industry Regulatory Authority [97].

3.2.3. Financial Literacy Measurement

As mentioned, financial literacy includes objective financial knowledge, subjective financial knowledge, and subjective financial ability.

We used the IPF (iterated principal factor) method of factor analysis to create finindex, which measured objective financial knowledge through 9 financial multiple-choice quizzes from the SAVE survey of 2009, covering basic math and advanced finance topics. This approach has also been employed by Lusardi and Mitchell [98] and Van Rooij, Lusardi, and Alessie [74] to determine the impact of different factors on financial knowledge. To categorize short-term and long-term behaviors, we combined four sub-behaviors based on the research conducted by Kim et al. [64]. This allowed us to assign a numerical value ranging from 0 to 4 to both behaviors, which is suitable for ordered logistic regression as it requires ordered variables.

To measure subjective financial knowledge and ability, we referred to previous research studies that provided appropriate methods. We noticed similarities in the content and question format used to quantify subjective financial knowledge across these studies. The most commonly used question was "Make a self-assessment of your financial knowledge", which was typically answered on a Likert scale of 7 (sometimes 5) [48,58,60,64,99,100], demonstrating the prevalence of self-assessment as a method for measuring respondents' subjective financial knowledge. Therefore, we utilized this scale to ensure accurate measurement in our study. Respondents were required to rate their subjective financial knowledge and financial ability on a Likert scale ranging from 1 (Bad) to 7 (Excellent). The self-assessment scale allowed us to capture respondents' perceptions of their financial knowledge, which encompasses both formal education and real-life experiences, as well as their ability to make sound financial decisions. We then converted these Likert-type explanatory variables into binary variables to use them in the logistic model. The answers were classified into three groups representing three levels, and dummy variables were created: Low (1–2) = 1, Medium (3–5) = 2, and High (6–7) = 3.

3.2.4. Control Variables

In this study, we included control variables for demographic factors, including gender, age, and major [40,52,65,101].

For age, we focused on young individuals aged 18–25 who reside and work in Ho Chi Minh City. This age group typically consists of students and newcomers who possess both the desire and mental capacity to engage in financial education. Gender was categorized as male (0) and female (1). The field of study/occupation variable distinguished between economics-related majors (1) and other majors (0).

3.3. Research Models

This research employed both qualitative and quantitative methods, utilizing Stata 16 as statistical software. We assessed the consistency and validity of the measurement scale through factor analysis and the Cronbach's alpha test.

The independent *t*-test was used to compare the means of financial behavior variables between individuals with financial education and those without. This enabled us to determine the differences between these two groups in terms of their engagement in different financial behaviors.

In the formal research analysis, a logistic binary model was used as the primary means to estimate the impact of financial education and literacy on individual financial behavior. Financial behavior is categorized into two segments: short-term financial behavior and long-term financial behavior.

Short-term financial behavior encompasses aspects such as emergency funds, spending habits, overdraft usage, and budgeting. On the other hand, long-term financial behavior includes planning for retirement, having a retirement account, investment activities, and setting financial goals.

This research utilized a binary logistic regression model to examine the relationship between various factors and financial behaviors. The model is represented as follows:

$$Yi = \log(P_i/(1 - P_i)) = \beta_0 + \beta_1.\text{finedu}_i + \beta_2.\text{finindex}_i + \beta_3.\text{subfinknow}_i + \beta_4.\text{subfinabi}_i + \beta_5.\text{gen}_i + \beta_6.\text{major}_i + \varepsilon$$

In this equation:

- Y_i represents the financial behaviors;
- finedui represents the level of financial education;
- finindexi refers to the objective financial knowledge;
- subfinknowi represents the subjective financial knowledge of the respondents;
- subfinabii represents the subjective financial ability of the respondents;
- geni represents the gender of the respondents;
- majori indicates the field of study of the respondents;
- ε represents the error term in the model.

The variables are described in detail in Appendix A.

By estimating the coefficients (β_0, β_1, β_2, β_3, β_4, β_5, β_6), the logistic regression model allowed us to assess the impact of these variables on the financial behaviors of interest.

Our research involved two stages of regression analysis. In the first stage, logistic regression models were estimated to study the individual impact of financial literacy and education on short-term and long-term financial behaviors separately. This allowed for a detailed investigation of how these factors influence each specific behavior.

In the second stage, the analysis focused on assessing the overall impact of financial literacy and education on both short-term and long-term financial behaviors collectively. By considering the aggregated effects, a comprehensive perspective could be obtained regarding the impact of financial literacy and education on these activities. This approach enabled us to draw meaningful conclusions about the nexus between financial literacy, financial education, and financial behaviors as a whole.

For a cross-sectional study, evaluating common method bias (CMB) is crucial. Examining and adjusting for CMB could ensure the accuracy and reliability of research findings. In this study, to mitigate CMB, we included control variables such as gender, major, and age. Data were collected from multiple sources (online and offline) across diverse regions and industries over a relatively long period of one month, which also helped in assessing and addressing CMB in the research model. We also employed the method of assessing the correlation between measurement variables to evaluate CMB, which is one of the popular and straightforward approaches used to examine the presence of CMB.

4. Research Results and Discussion

4.1. Descriptive Statistics

4.1.1. Financial Behavior

Short-term financial behavior consists of four actions: emergency funds, spending, overdraft, and budgeting. Table 1 presents descriptive statistics indicating that young individuals in the sample generally understand financial education. For instance, 72.8% of the surveyed individuals have an emergency fund, and 70.6% have a budget. However, there are still areas of concern, such as a tendency to overspend on credit, with only 54.8% of young people avoiding overdrafts and 52.247.8% spending more than their monthly income allows. These findings suggest that young individuals are prone to short-term financial difficulties.

Long-term financial behavior encompasses retirement planning, retirement savings accounts, investment, and setting long-term financial goals. The estimations in Table 1 also reveal that a majority of the young individuals interviewed have long-term financial objectives and are capable of formulating retirement plans. However, it is noteworthy that only 42% of young Vietnamese individuals engage in investing, which may be attributed to perceiving it as highly risky. Instead, they tend to opt for "safer" behaviors. While it is commendable to plan for the future and consider one's financial well-being, it is crucial for young people to actively participate in investing and be open to acquiring new financial concepts.

Table 1. Descriptive statistics of dependent variables.

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
SF1	1000	0.728	0.4451	0	1
SF2	1000	0.478	0.4997	0	1
SF3	1000	0.548	0.4979	0	1
SF4	1000	0.706	0.4557	0	1
LF1	1000	0.698	0.4592	0	1
LF2	1000	0.81	0.3924	0	1
LF3	1000	0.426	0.4947	0	1
LF4	1000	0.648	0.4778	0	1

Note: SF1 is Emergency funds; SF2 is Spending; SF3 is Overdraft; SF4 is Budgeting; LF1 is Planning for retirement; LF2 is Having a retirement account; LF3 is Investment; LF4 is Having financial goals.

4.1.2. Evaluation of the Measurement Scale of Research Concepts

Factor analysis is a statistical technique commonly used to assess the reliability of constructing composite variables from individual items. It helps in determining the number of underlying dimensions that a set of variables can represent and examines the relationships between different elements within those variables. In this study, we employ IPF factor analysis to analyze the data. We construct a model where objective financial variables play a significant role in determining the impact of financial education on young individuals. These objective financial variables serve as the basis for defining the level of financial literacy among young people using financial indicators. We conducted a test using Cronbach's alpha coefficient to evaluate the model's reliability and determine the dependability of the variables included. This coefficient provides a general assessment of the model's goodness and measures the internal consistency and reliability of the variables used.

Based on the data in Table 2, the Cronbach's alpha coefficient falls within the range of 0.7 to 0.8. This range is considered to be a high average coefficient and indicates good reliability and suitability for the chosen model. A Cronbach's alpha coefficient in this range suggests that the variables included in the model are internally consistent and reliable for measuring the construct of interest. Therefore, the data support the notion that the selected scale has good reliability and is appropriate for the model used by our research group.

Table 2. Cronbach's Alpha results of objective financial knowledge.

Scale Reliability Coefficient	Number of Items
0.7466	9

Source: Authors' analysis.

We also examine the key assumptions for logistic regression including linearity of the logit and absence of multicollinearity. We examined the linearity of the logit assumption by plotting the logit-log graph, which shows a linear or nearly linear relationship between the independent variables and the log odds of the dependent variable. This indicates that the assumption of linearity of the logit is met. The correlation analysis is described in Table 3.

Table 3. Table of correlations between independent variables.

	finindex	gender	major	age	finedu	subfinknow	subfinabi
finindex	1.000						
gender	−0.1015	1.000					
major	0.293	−0.0298	1.000				
age	−0.0341	0.0515	−0.0481	1.000			
finedu	0.5987	−0.0701	0.1932	−0.0247	1.000		
subfinknow	0.2452	−0.1307	0.1226	0.0912	0.2448	1.000	
subfinabi	0.1936	−0.0795	0.0959	0.0728	0.1645	0.6673	1.000

Notes: finindex: financial index, gender: gender, major: major, age: age, finedu: financial education, subfinknow: financial literacy, subfinabi: financial ability.

In the correlation analysis table (Table 3), the coefficients for each variable range from −0.1307 to 0.6673, indicating that most of the variables either have no correlation with each other or have correlations that are not statistically significant. This result means that the variables are discriminant and do not cause multicollinearity. This correlation analysis also demonstrates that the phenomenon of common method bias does not exist.

Specifically, despite being weak, financial education has a positive correlation with the financial literacy index (0.5987). Subjective financial knowledge and the subjective financial ability index also have a positive correlation with each other (0.6673). This implies that receiving financial education can somewhat help improve the financial awareness of young people. With financial knowledge, Vietnamese youths may have a better ability to apply it effectively in financial practices.

Based on the *t*-test results (Table 4), it can be observed that the mean values of respondents who have received financial education are generally better in both short-term and long-term financial behaviors compared to respondents without financial education. Specifically, variables SF2 (spending) and SF3 (overdraft) indicate that individuals with financial education exhibit lower mean values, suggesting better financial behavior in these areas.

Table 4. Results *t*-test of financial behaviors between two groups of behaviors.

Have Participated in Financial Course on Average				diff	t	*p*
		No	Yes			
Short-term behaviors	SF1	0.654	0.834	−0.171	−7.853	0.000
	SF2	0.681	0.185	0.496	21.6602	0.000
	SF3	0.691	0.341	0.35	14.2705	0.000
	SF4	0.634	0.81	−0.176	−7.4839	0.000
Long-term behaviors	LF1	0.681	0.722	−0.0406	−2.6847	0.004
	LF2	0.749	0.897	−0.148	−7.3293	0.000
	LF3	0.39	0.478	−0.088	−3.4092	0.000
	LF4	0.576	0.751	−0.175	−7.0891	0.000

Note: SF1 is Emergency funds; SF2 is Spending; SF3 is Overdraft; SF4 is Budgeting; LF1 is Planning for retirement; LF2 is Having a retirement account; LF3 is Investment; LF4 is Having financial goals.

Furthermore, the *p*-value for the difference in responses between the two groups is significant, suggesting a significant difference in financial behavior between people who have received financial education and those who have not. As a result, we adopt hypothesis H1, indicating a considerable difference in financial behavior between these two groups.

4.2. Logistic Regression Results

Binary logistic regression estimation results for two groups of long-term and short-term financial behaviors are shown in Tables 5 and 6, respectively.

Table 5 presents the logistic regression model results investigating the effects of financial education and literacy variables on short-term financial behavior. All chi-square test results are significant, indicating that the model fits the data well. Additionally, the count R-squared value is approximately 80%, suggesting that the model explains about 80% of the variance in the dependent variable.

The findings reveal that financial education positively impacts the emergency funds variable at a 5% significance level, indicating that individuals with higher levels of financial education are more likely to have emergency savings. However, financial education negatively affects spending and overdraft variables at a 1% significance level, suggesting that those with more financial education tend to spend less and avoid overdraft situations. There is no significant evidence on the impact of financial education on budgeting.

Furthermore, the financial literacy index shows a positive influence on emergency funds and budgeting variables, indicating that individuals with higher financial literacy are more likely to have emergency savings and effectively manage their budgets. However, it has a negative impact on spending and overdraft variables, suggesting that higher financial

literacy may lead to reduced spending and avoidance of overdraft situations. All results are significant at a 1% level.

Table 5. Logistic regression for short-term financial behavioral variables.

Variable	Emergency Funds	Spending	Overdraft	Budgeting
	Odds Ratio	**Odds Ratio**	**Odds Ratio**	**Odds Ratio**
	Financial literacy and financial education			
finedu	1.4950 **	0.1760 ***	0.6216 ***	1.1585
	(0.2444)	(0.0264)	(0.0881)	(0.2075)
finindex	3.3842 ***	0.3062 ***	0.0168 ***	4.3128 ***
	(0.9940)	(0.0859)	(0.0051)	(1.4313)
subfinknow	1.1763 **	0.7528 ***	1.2928 ***	1.8843 ***
	(0.0739)	(0.0452)	(0.0786)	(0.1414)
subfinabi	1.3991 ***	1.0254	0.8000 ***	1.7500 ***
	(0.0813)	(0.0452)	(0.0438)	(0.1164)
Demographic				
age	1.0536	0.9860	0.9669	1.0473
	(0.0344)	(0.0305)	(0.0294)	(0.0381)
gen	1.2125	1.6423 ***	1.2100	1.9741 ***
	(0.1761)	(0.2351)	(0.1691)	(0.3175)
major	0.9902	0.7753	1.6778 ***	0.8363
	(0.1558)	(0.1238)	(0.2688)	(0.1503)
LR chi2	205.50	464.48	417.13	530.67
Prob > chi2	0.0000	0.0000	0.0000	0.0000
Count R^2	0.7360	0.7460	0.7260	0.8060

Notes: **, *** represent significance at the 5%, and 1% levels, respectively. finindex: financial index, gender: gender, major: major, age: age, finedu: financial education, subfinknow: financial literacy, subfinabi: financial ability.

Subjective financial knowledge positively affects emergency funds (at 5% significance), overdraft, and budgeting (at 1% significance) variables but negatively impacts the spending variable (at 1% significance). This result suggests that individuals with excellent subjective financial knowledge are more likely to have emergency savings, engage in overdraft behavior, and effectively manage their budgets. Additionally, subjective financial ability significantly impacts emergency funds and budgeting variables, indicating that individuals with higher financial ability are more likely to have emergency savings and effectively manage their budgets. However, it negatively influences overdraft behavior in the short term, suggesting that those with higher financial ability are less likely to engage in overdraft situations.

Regarding demographic variables, age does not appear to have a significant influence on the financial variables examined. However, gender (gen) has a positive influence on spending and budgeting variables, suggesting that females may be more inclined to spend and effectively manage their budgets. Additionally, the major field of study (major) has a positive impact on the overdraft variable, indicating that individuals with economics-related majors may be more prone to engaging in overdraft behavior. These findings are significant at a 1% level.

Table 6 presents the results of a logistic regression model investigating the effects of financial variables on long-term financial behavior. All chi-square test results are significant, indicating that the model is a good fit for the data. Additionally, the count R-squared value is approximately 70–85%, indicating that the model accounts for about 70–85% of the variability in the dependent variable. Table 6 focuses on the impact of factors on long-term financial behavior. At first glance, the odds ratio of financial education shows a significant increase in the behaviors of retirement planning, having a retirement account, and financial goal setting by 29.95%, 21.78%, and 30.52%, respectively. Objective financial knowledge, represented by the financial index, increases the likelihood of having retirement accounts

and setting financial goals in the long term at a significance level of 1%. However, this factor decreases the probability of planning retirement and investing among young individuals. Subjective financial knowledge positively impacts all four factors in the long term, with a significance level of 1%. Meanwhile, subjective financial ability positively impacts three long-term financial behaviors, including having a retirement account, investment, and setting financial goals at a significance level of 1%.

Table 6. Logistic regression for long-term financial behaviors.

Variable	Planning Retirement Odds Ratio	Having Retirement Account Odds Ratio	Investment Odds Ratio	Financial Goals Odds Ratio
Financial literacy and financial education				
finedu	1.2995 *	1.2178	1.3940 **	1.3052 *
	(0.1907)	(0.2633)	(0.2073)	(0.1946)
Finindex	0.6218 *	7.4268 ***	0.4856 ***	2.7554 ***
	(0.1663)	(2.9843)	(0.1321)	(0.7520)
Subfinknow	1.2143 ***	1.6133 ***	1.1753 ***	1.2212 ***
	(0.0698)	(0.1463)	(0.0672)	(0.0710)
subfinabi	0.9758	2.1815 ***	1.7916 ***	1.3794 ***
	(0.0500)	(0.1852)	(0.0992)	(0.0742)
Demographic				
age	1.0266	0.9474	1.0141	1.0573 *
	(0.0303)	(0.0329)	(0.0300)	(0.0321)
gender	1.3150 **	1.1015	0.9195	1.1968
	(0.1704)	(0.2147)	(0.1226)	(0.1621)
major	0.9606	0.8998	0.6583 ***	1.0067
	(0.1437)	(0.1821)	(0.1015)	(0.1510)
LR chi2	262.70	476.55	295.03	214.43
Prob > chi2	0.0004	0.0000	0.0000	0.0000
Count R^2	0.7000	0.8580	0.7100	0.7060

Note: *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively; finindex: financial index, gender: gender, major: major, age: age, finedu: financial education, subfinknow: financial literacy, subfinabi: financial ability.

The results also show that gender is the only demographic variable that significantly impacts retirement planning at a significance level of 5%. This means that women are more likely to plan for their retirement. Explanations may include their longer life expectancy, income disparities that make them more conscious of the need to secure their financial future, social and cultural expectations that emphasize their responsibility for long-term financial planning, and their awareness of potential financial risks in retirement. Individuals majoring in finance tend not to invest, with a significance level of 1%. These young people, who possess a deeper understanding of financial markets and investment risks, could exercise more caution and selectivity in their investment decisions. They may also have a different perspective on wealth accumulation and financial goals, which could influence their investment decisions.

Overall, financial education and subjective knowledge have a positive impact on most short-term and long-term financial behaviors among young Vietnamese individuals. This finding is supported by previous research [64], which found that financial education had a positive impact on long-term financial behavior. These results highlight the importance of providing financial education and developing personal financial awareness in improving the financial management capabilities of young individuals.

4.3. Ordered Logistic Results

To evaluate the goodness of fit, the Maximum Likelihood Estimation test is used. The results in Table 7 show that the LR coefficient χ has a high value (446.60 for short-term model and 531.40 for long-term model) with Prob > chi2 = 0.0000, proving that this model is suitable.

Table 7. Ordered logistic regression for both financial behaviors.

	Short-Term	**Long-Term**
	Odds Ratio	**Odds Ratio**
finedu	0.384 ***	1.306 **
finindex	0.280 ***	1.330 **
sufinaknow	1.281 ***	1.341 ***
subfinabi	1.287 ***	1.553 ***
gender	1.823 ***	1.067
age	1.006	1.044 *
major	1.118	0.91
LR chi2	446.60	531.40
Prob > chi2	0.0000	0.0000

Note: *, **, *** represent significance at the 10%, 5%, and 1% levels, respectively. finindex: financial index, gender: gender, major: major, age: age, finedu: financial education, subfinknow: financial literacy, subfinabi: financial ability.

The results from the ordered logistic regression in Table 7 provide insights into the long-term and short-term financial behaviors of young Vietnamese adults. It is evident that financial education and the financial index have similar impacts on long-term and short-term financial behaviors.

The odds ratio of 0.384 for the relationship between short-term behavior and financial education demonstrates that a respondent with more financial education is 61.6% less likely to engage in positive temporary financial habits than somebody with less financial education. This implies that greater financial education may result in greater caution or conservative short-term financial conduct.

In contrast, regarding the long-term perspective, the odds ratio of this relationship is 1.306, with a significance level of 1%, indicating that a respondent with a higher level of financial education has a 30.6% higher likelihood of exhibiting positive long-term financial behavior compared to someone with lower financial education. These results suggest that higher financial education may contribute to better long-term financial planning and decision making.

These findings highlight financial education's importance in shaping short-term and long-term financial behaviors among young Vietnamese adults. While it may initially lead to more conservative short-term behavior, it ultimately contributes to more positive long-term financial outcomes.

The findings regarding objective financial knowledge, as represented by the finindex variable, align with the previous results. The odds ratio for the relationship between objective financial knowledge and short-term behavior is 0.28, indicating that an individual with more objective financial knowledge has a 72% lower likelihood of displaying positive short-term financial behaviors than others. However, in the long-term perspective, this figure is 1.33, suggesting that a young adult with higher objective financial knowledge has a 33% higher likelihood of exhibiting positive long-term financial behavior than others. These results indicate that young adults prioritize the application of knowledge and skills gained for long-term financial behaviors.

There are more constant patterns in the relationship between subjective financial knowledge and subjective financial ability and both long-term and short-term behaviors. The odds ratio for subjective financial knowledge is 1.281 for short-term behaviors and 1.341 for long-term behaviors. According to these results, individuals who perceive themselves as having a strong understanding of financial matters are more inclined to engage in responsible financial practices, resulting in significant increases of 28.1% in short-term financial behaviors and 34.1% in long-term financial behaviors. Similarly, individuals who have a positive subjective perception of their financial capability are more likely to engage in favorable short-term and long-term financial practices, with increases of 28.7% and 55.3%, respectively.

We reject hypothesis H2 and accept hypothesis H3 in light of these findings. The results are in line with earlier research [20,64], which suggests that long-term financial activities, such as budgeting and goal setting, may be influenced by behavioral or psychological elements that are unknown. These results imply that consistent effort and motivation are required to carry out these behaviors effectively.

5. Conclusions and Research Implications

5.1. Conclusions

This study contributes to the existing research on financial literacy by investigating the correlation between financial education, financial literacy, and long-term and short-term financial behaviors among Vietnamese youth. The findings of our study provide support for the acceptance of hypotheses H1 and H3.

Hypothesis H1 suggests a significant difference in financial behavior between individuals who have received financial education and those who have not. This finding suggests that engaging in financial education could support young people in achieving better financial performance, emphasizing the significance of financial education in shaping financial behaviors among young adults. According to hypothesis H3, financial literacy positively influences wise long-term financial decisions. This finding emphasizes the role of financial literacy in promoting responsible financial behaviors.

This study also reports a weak correlation between financial literacy and short-term financial behavior, meaning that those who are more financially literate tend to behave more conservatively or cautiously when making short-term financial decisions.

In general, this study advances knowledge of how financial literacy affects young Vietnamese people's financial actions. The results emphasize the significance of financial literacy and education in fostering favorable financial outcomes in the short- and long-term.

5.2. Research Implications

The findings of our research have important implications for policymakers aiming to improve financial literacy and individual financial behavior. Based on these insights, we offer several recommendations that can guide policy interventions in this area.

Firstly, our research highlights the effectiveness of financial education in promoting positive financial behavior. Policymakers should prioritize implementing interventions that target improvements in financial literacy. These interventions can be delivered through educational institutions, such as schools and universities, as they have been proven to be successful in boosting financial awareness and knowledge. People are better able to make wise financial decisions by strengthening their financial literacy.

Secondly, our study emphasizes the importance of addressing changes in financial behavior directly, in addition to improving financial literacy. While financial literacy has an indirect positive influence on financial conduct, its effect is modest. Therefore, policymakers should design interventions that not only enhance financial knowledge but also focus on promoting actual changes in financial behavior. One specific area that requires attention is investment literacy. Our findings indicate that investment activities are performed by a minority of individuals, highlighting the need for increased investment literacy among young adults by equipping them with necessary knowledge and skills.

Furthermore, our research reveals that a considerable portion of financial decision making is influenced by subjective financial knowledge. Effective financial education programs should attempt to achieve higher levels of subjective financial knowledge in addition to providing more objective financial knowledge. Individuals can build a thorough comprehension of financial ideas and enhance their capacity for making financial decisions by combining both objective and subjective financial information.

In conclusion, our recommendations for policymakers include raising awareness among young adults about financial behaviors and implementing comprehensive education programs that address both objective and subjective financial knowledge. By taking these

steps, policymakers can empower the younger generation to make informed financial decisions and improve their overall financial well-being.

5.3. Sustainability-Related Implications

Financial literacy and financial education play a crucial role in addressing sustainability-related challenges. By enhancing individuals' understanding of financial concepts, tools, and strategies, financial literacy empowers them to make informed decisions that align with sustainable practices. This includes making responsible investment choices, managing personal finances in an environmentally conscious manner, and supporting sustainable businesses and initiatives.

The results of our study can contribute to addressing sustainability-related challenges in several ways. Firstly, by examining the impact of financial education and financial literacy on the financial behaviors of young individuals in Vietnam, we can identify the specific areas where interventions and educational programs can be targeted to promote sustainable financial practices. This knowledge can inform the development of tailored financial education initiatives that integrate sustainability principles and encourage individuals to adopt sustainable behaviors.

Secondly, our study can shed light on the relationship between financial literacy, financial behaviors, and sustainability outcomes. By understanding how financial literacy influences individuals' decision-making processes and their engagement in sustainable practices, policymakers and educators can design effective strategies to promote sustainable financial behaviors among young individuals. This can include incorporating sustainability-focused content into financial education curricula or providing resources and tools that facilitate sustainable financial decision making.

Lastly, the findings of our study can contribute to the broader discourse on the importance of financial literacy and education in achieving sustainability goals. By highlighting the positive impact of financial education on sustainable financial behaviors, our research can advocate for increased investment in financial literacy programs and policies that prioritize sustainability. This can lead to greater awareness, engagement, and action towards building a more sustainable and resilient future.

5.4. Limitations and Future Orientation

We acknowledge that there are several constraints and challenges in accurately measuring the effect of financial education and literacy on financial behavior. When analyzing the results and planning more study in this field, these limitations should be taken into account.

One constraint is the reliance on self-reported survey data, which can be influenced by societal expectations, social desirability bias, and respondents' subjective interpretations of their behaviors. These factors may lead to respondents not accurately reporting their actual financial behavior. To mitigate this constraint, we recommend future research to conduct face-to-face interviews or add other supplemental qualitative research methods for a more in-depth exploration and verification of respondents' financial behaviors.

In addition, financial behaviors are complex and can be influenced by various factors over time. Hence, long-term research to continuously investigate behavioral finance and its impact on financial behavior is crucial. Studies that track people over an extended period, or longitudinal research, can offer important insights into the long-term consequences of financial literacy and education on financial behavior. Such research can help identify sustainable solutions and interventions that effectively promote positive financial behaviors.

Additionally, the measurement of financial literacy itself can be challenging. Objective and perceived financial literacy metrics may not fully capture an individual's true level of financial comprehension, especially in cases where there is a lack of financial knowledge or language barriers. It is important to consider these limitations when assessing the nexus between financial literacy and financial behavior. Future research should explore

alternative measurement approaches and consider the cultural and linguistic context to ensure accurate assessment of individuals' financial literacy levels.

In conclusion, while our study offers insightful information on the connection between financial literacy, education, and behavior, it is important to recognize and address the constraints and limitations in accurately measuring and interpreting these relationships. By considering these constraints and conducting further research, we can enhance our understanding of the impact of financial education and literacy on financial behavior and develop more effective interventions and policies.

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Appendix A

Table A1. Variable notes.

Variable	Notation	Description/Questions	Reference
Dependent Variables			
Short-term financial behavior			[20,64]
Emergency funds	SF1	Whether respondent has a three-month emergency fund Yes—1/No—0	
Spending	SF2	Whether respondent spends more than earns Yes—1/No—0	
Overdraft	SF3	Whether respondent uses a checking account excessively Yes—1/No—0	
Budgeting	SF4	Whether respondent has a saving account. Yes—1/No—0	
Long-term behavior			
Planning for retirement	LF1	Whether respondent has a plan for retirement Yes—1/No—0	
Having a retirement account	LF2	Whether respondent has a retirement account Yes—1/No—0	
Investment	LF3	Whether respondent owns any securities Yes—1/No—0	
Financial goals	LF4	Whether respondent sets and achieves long-term financial objectives. Yes—1/No—0	

Table A1. *Cont.*

Variable	Notation	Description/Questions	Reference
		Explanatory variables	
Financial education	finedu	Whether respondent received financial education from school/work Yes = 1, No = 0	[97]
Objective financial knowledge	finindex	Respondent's objective financial knowledge through 9 questions on the financial topics below: Interest Inflation Volatility Risk diversification Financial market Mutual funds Compound interest Money illusionBond	[60]
Subjective financial knowledge	subfinknow	Respondent's financial knowledge gained from education and reality; Likert 7 (1—Bad, 7—Excellent). The answers are classified into 3 groups representing 3 levels of subjective financial knowledge and a dummy variable is created: Low (1–2) = 1, Medium (3–5) = 2, High (6–7) = 3	[48,58,60,64,100]
Subjective financial ability	subfinabi	Respondent's financial ability in solving financial problems properly; Likert 7 (1—Bad, 7—Excellent). The answers are classified into 3 groups representing 3 levels of subjective financial ability and a dummy variable is created: Low (1–2) = 1, Medium (3–5) = 2, High (6–7) = 3	[48,58,64,100]
		Control variables	
Gender	gen	Respondent's gender + Male—0 + Female—1	
Age	age	Respondent's age From 18–25	
Field of study/occupations	major	Respondent's major +Economics-related major—1 + Other major—0	

Source: Authors' compilation.

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